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Railway Charges

THE Railway Rates Tribunal issued on Tuesday evening a brief official statement of its decision that the standard charges and exceptional charges of each of the amalgamated companies shall be increased on October 1 next by 5 per cent., subject to certain provisions relating to the application of the increase, the broad effect of which is that in the case of merchandise and coal charges of less than 10d. a ton, and in the case of workmen's tickets fares of less than 5d., will not be increased. The suburban passenger fares of the companies within the London Passenger Transport area are not affected by this decision. Fares during the present holiday season will also not be affected. Reading the decision in conjunction with the explanatory statement issued by the companies in May last it would appear that on all existing charges for the conveyance of coal, etc., livestock, and general merchandise from 11d. to 2s. 5d. there will be an increase of 1d.; from 2s. 6d. to 4s. 1d., an increase of 2d.; from 4s. 2d. to 5s. 10d., an increase of 5d.; and thereafter advancing by 1d. for each additional 1s. 8d. in the existing chargeable rate. On standard fares up to 11½d. there will be an increase of ½d.; from 1s. to 2s. 5d. an increase of 1d. On monthly return, week-end, and standard fares of 2s. 6d. and up to 4s. 1d., an increase of 2d.; from 4s. 2d. to 5s. 10d. an increase of 3d.; and thereafter advancing by 1d. for each additional 1s. 8d. in the existing chargeable fare. In the case of day and half-day excursion fares, where the existing fare does not exceed 2s. the increase will be 1d.; for fares over 2s. but under 3s. an increase of 2d.; for fares of 3s. and over up to 7s. 6d. an increase of 3d., and so on in proportion. Season tickets (ordinary and traders) will be increased 5 per cent. Daily workmen's fares of 5d. and over will be increased by ½d., and weekly workmen's tickets issued at the price of six daily workmen's tickets (of 5d. and over) will be increased by 3d.

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Railway Returns for 1936

The railway returns for 1936 recently published by the Ministry of Transport show that on railways in Great Britain other than London Transport railways, passenger journeys, excluding those taken by holders of workmen's and season tickets, numbered 638,208,113, an increase of 1·38 per cent., with receipts of £44,254,063, which were higher by £1,794,268, or 4·22 per cent. First class ordinary passengers increased in number from 13,415,640 to 14,330,040, second class from 1,591,713 to 1,640,354, and third class from 614,457,536 to 622,286,360, and there was an increase in the average receipt per journey in each class. First class ordinary receipts advanced 10·03 per cent., second class 10·78 per cent., and third class 3·67 per cent. The proportion of journeys (other than those by holders of workmen's and season tickets) made with day or half-day excursion tickets was 69·96 per cent. both in 1935 and 1936, with proportionate receipts of 32·55 per cent. in 1935 and 32·14 per cent. in 1936. In the case of period tickets the proportion in numbers was 8·17 per cent. in 1936 against 7·86 per cent. in 1935, and the proportion in receipts rose from 40·90 per cent. in 1935 to 41·16 per cent. in 1936. Higher class merchandise receipts amounted to £41,746,353, an increase of £2,004,387, or 5·04 per cent. Minerals and merchandise (classes 1-6) produced receipts of £14,191,548, an improvement of £828,760, or 6·20 per cent.

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The Week's Traffics

To the net increase of £71,000 in the traffics of the four main line companies for the past week passengers contributed £62,000 and merchandise £17,500, but coal brought in £8,500 less. For the year to date the combined receipts of the four companies amount to £88,700,000, an increase of £3,887,000, or 4·58 per cent. Passenger train traffics are £38,416,000, an increase of £1,648,000; the merchandise receipts of £31,480,000 are £990,500 higher; and in the coal class traffics of £18,804,000 there is an improvement of £1,248,500. Percentage increases to date in passenger train traffics are 5·62 on the Southern, 4·77 on the L.N.E.R., and 4·11 on the L.M.S.R. In merchandise receipts the percentage increases are:—L.N.E.R. 4·46, G.W.R. 3·81, and L.M.S.R. 3·03. Coal class earnings give increased percentages of 11·69 on the Great Western, 6·84 on the L.M.S.R., and 6·62 on the L.N.E.R.

	29th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	
	£	£	£	£	£	%
L.M.S.R. ..	+ 18,000	+ 14,000	− 11,000	+ 21,000	+1,458,000	+ 4·23
L.N.E.R. ..	+ 22,000	− 3,000	− 4,000	+ 15,000	+1,287,000	+ 5·15
G.W.R. ..	+ 1,000	+ 8,000	+ 11,000	+ 20,000	+ 736,000	+ 5·20
S.R.	+ 21,000	− 1,500	− 4,500	+ 15,000	+ 406,000	+ 3·62

London Transport receipts for the week are £557,800, an increase of £9,800.

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Interim Dividends

The interim dividend statements issued last week by the Southern and the London & North Eastern Railway Companies made a very good impression. On Thursday last week a dividend of 2 per cent. actual on Southern Railway 5 per cent. preferred ordinary stock was announced, and on Friday the London and North Eastern declaration of interim dividends of 1 per cent. on the 4 per cent. first preference stock and of 1¼ per cent. on the 5 per cent. redeemable preference stock (which ranks *pari passu* with the first preference) gave even more satisfaction. Last year the interim dividend on Southern preferred

ordinary was 1 per cent., and no interim distribution was made on L.N.E.R. preference stocks. The Southern interim statement for 1937 shows that receipts from passenger train traffic in the half-year increased by £403,000, that goods train traffic receipts were £65,000 lower, and that railway working expenditure was £188,000 higher, which indicates that 44·38 per cent. of the increase in traffic receipts has been retained as net. Net receipts from steamboats, docks, harbours and wharves, hotels, interest, &c., improved by £60,000, and the net revenue for the half-year is approximately £210,000 more. In the case of the London & North Eastern gross receipts for the first half of 1937 of railway and ancillary businesses and miscellaneous receipts (net) show an increase of £1,222,400 compared with the corresponding period of 1936. The estimated increase in expenditure is £451,900, leaving an increase in net receipts of £770,500. This shows the remarkable achievement of retaining in net 63 per cent. of the increase in receipts. Southern preferred ordinary received its full 5 per cent. for the year in 1935 and 1936, and ½ per cent. was paid on the deferred in 1936. The London & North Eastern first and 5 per cent. preference stocks received their full dividends for the year 1936 for the first time since 1931, and the ½ per cent. on the second preference was the first payment since 1931.

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Overseas Railway Traffics

Since the beginning of the new financial year on July 1 the traffics of the Central Uruguay Railway and its extension companies have been shown together in consequence of the consolidation recently effected. The total receipts of the group for the first three weeks are £37,275, a decrease of £1,383 in sterling, or 45,122 dollars in Uruguayan currency. Argentine traffics have improved during the past fortnight. The Buenos Ayres Great Southern has converted its previous decrease of £8,571 into an increase of £30,346, and the Central Argentine has added £48,674 to its previous increase.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
		£	£	£	£
Buenos Ayres & Pacific ..	4th	82,630	+ 9,269	283,499	+ 18,350
Buenos Ayres Great Southern ..	4th	125,993	+ 24,705	408,251	+ 30,346
Buenos Ayres Western	4th	47,613	+ 10,758	154,218	+ 17,790
Central Argentine	4th	149,873	+ 23,172	526,330	+ 80,496
Canadian Pacific	29th	537,600	+ 45,400	14,958,000	+ 1,010,400
Bombay, Baroda & Central India	16th	198,450	+ 17,950	2,923,800	+ 221,775

Canadian Pacific gross earnings for the first five months of 1937 amount to £11,074,200, an increase of £856,800, and net earnings to £1,413,000, an increase of £290,000.

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A Loss to the American Railways

The American railways, particularly those in the Eastern States, have suffered a severe loss through the unexpected death of Mr. E. E. Loomis, for many years President of the Lehigh Valley Railroad, and whose career is outlined in our personal columns this week. A comparatively small railroad, judged by American standards, the Lehigh Valley consists of a main line approximately 450 miles long between Jersey City and Buffalo, with branches to Niagara Falls, in the anthracite region around Wilkes-Barre, and in western New York State. Under the ægis of Mr. Loomis it achieved world-wide fame for the excellence of its track, one of the best in the United States; its passenger services, notably the famous Black Diamond, are as deservedly popular as the fine scenery through which the line passes. But Mr. Loomis's death will be felt in a much wider sphere than that of his own railway, because he was for so long Chairman of the Eastern Railroads Public Relations Committee. A fine speaker and one who was admired by all who came in contact with him, he leaves behind him a monument in the form of a most efficiently operated and maintained railway, as well as a greatly improved feeling between the railways in the East and the trading interests. A frequent visitor to, and great admirer of, this country, he will be missed in London and by British railway officers whom he always made so welcome in New York.

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Crewe: A Railway-Made Town

When the Grand Junction Railway was opened, on July 4, 1837, a two-platform wayside station was provided in the parish of Monks Coppenhall, a mere hamlet of some 30 persons, but, as there was a station called Coppenhall about 1¼ miles further north, Crewe took its name from a small township in the parish of Barthomley adjacent to Lord Crewe's hall. A contemporary guide said: "There is a convenient and lofty brick house built here in modern Gothic style as an inn; a very neat house for the clerk of the station; and an engine-house with a spare engine which is always ready for use." The station stood on the north side of the Nantwich Road bridge, and the site of the inn is now occupied by the Crewe Arms Hotel. Crewe rapidly gained in importance through its favourable position as a railway junction for lines to Chester (and subsequently Holyhead), Manchester, the Potteries, and Shrewsbury, but it was the establishment of the Grand Junction Railway's locomotive works there in 1843 which was the real foundation of the town. At the jubilee in July, 1887, the Mayor's address to the L.N.W.R. acknowledged that "previous to the establishment of the workshops . . . Crewe consisted of a few houses only." By then the population was some 30,000; today, fifty years later, it is about 46,000. The original 2½ acres of works established under Francis Trevithick have grown to 160 acres where nearly 7,000 are employed.

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Faster to Scandinavia

One of the favourite routes from England to Scandinavia is that, in connection with the L.N.E.R. services to Harwich, provided by the Danish United Steamship Company thence to Esbjerg. By this route the North Sea is crossed in less than 24 hours with the utmost comfort, and the passenger is landed at the Danish west coast port in the late afternoon, in time to catch the high-speed diesel-electric train of the Danish State Railways to Copenhagen which is reached shortly before midnight. A further facility, most useful to those whose destination is beyond Copenhagen, has now been added by the institution of an air service between Esbjerg and Copenhagen, enabling passengers to reach the Danish capital in time to connect with night services thence to Stockholm, Gothenburg, and Oslo, thus providing the fastest route between London and the Swedish and Norwegian capitals. To some the adventure into the air across Denmark may perhaps be regarded a drawback, and the possibility of providing an earlier, and even faster, train from Esbjerg, and holding back the night service from Copenhagen to Norway and Sweden in order to make the connection, seems worth consideration. A further use of the Harwich-Esbjerg route has become effective this summer by a connection provided between Esbjerg and Frederickshaven in the north of Jutland, whence steamboat services ply to Gothenburg and the south of Norway.

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An Undetected Flaw

Colonel Trench's report on the accident to the up Irish Mail at Crewe station on April 14 will be found summarised on page 214. He concludes that the fracture of the axle of the kitchen car was the cause, and not a consequence, of the derailment. It must be regarded as a piece of extraordinary good fortune that the breakage did

not occur when the train was travelling at high speed. The casualties, too, were lighter than they might well have been, even as it was. Metallurgical tests showed the steel used for the axle to have been up to specified requirements, while the routine pit and shop examinations had been carried out in the customary correct manner. The flaw, which had developed to considerable proportions, was immediately next to the wheel face, and Colonel Trench is satisfied that the examiner at Holyhead, who dealt with the car on the morning of the accident, cannot reasonably be expected to have detected it. Failures of axles in coaching stock in train accidents are most rare, averaging a trifle less than 4 a year for the last 3 years. Nevertheless the L.M.S.R. is taking steps to reduce still further the liability to failure, and thus to diminish even this small risk. In consequence the report makes no recommendation.

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The "Leek & Manifold" Footpath

On Friday last (July 23) Sir Josiah Stamp handed a deed of gift of the old Leek & Manifold Valley Light Railway track to the Chairman of the Staffordshire County Council, and thus brought to an end the railway connection with this route. It will be recalled that this 2 ft. 6 in. gauge light railway (opened on June 27, 1904) was closed on March 10, 1934, and that considerable discussion has since taken place as to the future of the track, which provided the only means of access to certain parts of the Manifold valley. Eventually the decision was taken against building a road, and the L.M.S.R. offered the light railway track as a gift to the Staffordshire County Council. The latter has now converted it at a cost of £6,000 into a footpath, and this Sir Josiah formally declared open on Friday. In the course of his remarks Sir Josiah said that the total capital expended on the railway was £68,000, by 1921 the accumulated debit balance on revenue account was £14,000, and the railway was being worked at an annual loss of £2,000. It was in those circumstances that Parliament forced the L.M.S.R. to acquire the undertaking for £30,000. He was convinced that people might visit a beauty spot in large numbers without destroying its qualities if they would do so in a temper suited to their surroundings. The Manifold valley had been recommended in the National Park Report for preservation, and scientific and learned societies had long pressed for its complete preservation. Afterwards Sir Josiah and other visitors drove by car the full eight miles of the footpath from Waterhouses to Hulme End; that day was the last time vehicles other than bicycles were allowed along the route.

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Another Use for the Double Yellow Aspect

There is a peculiar fascination for some persons in elaborating proposals for signal aspects, for although the number of messages to be conveyed to enginemen by fixed signals is relatively small, a surprising number of different signal aspects has been proposed and a great many are in use on the various railways of the world. Some standardisation has been achieved here and there, especially on State railway systems or where State control in such matters is fairly rigid, but new proposals are still heard of from time to time. In the U.S.A., despite the activities of such bodies as the Association of American Railroads, there is much diversity of practice, particularly in certain details. The Union Pacific line has recently replaced some semaphore automatic signals, 32 years old, with colour-lights, and has given the double yellow aspect, already used by other members of the association in another sense, the meaning of a "grade" signal at "danger," which trains may pass at slow speed under permissive rules. The circuits are such that when the section ahead is occupied double yellow appears, but should a lamp fail in these circumstances an emergency red aspect is switched in. This arrangement has been adopted in preference to the marker lights or signs of other railways, so that drivers do not have to pass a red light in "grade" automatic signals without stopping, as to do so might, it is thought, weaken the force of that light in ordinary signals.

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Improving Water Circulation in Locomotive Boilers

The interest of locomotive engineers in America has been aroused by the introduction of a new feature of combustion aiming at the improvement of water circulation, nowadays recognised as one of the most important of locomotive boiler problems. Known as the "downflow" system, the new arrangement consists of one or more individual syphons suspended from the crown plate of the firebox and taking water from the back water space of the firebox. The syphon is free to expand and contract with the varying temperatures of the firebox and can be installed equally well where a combustion chamber is used. Mechanical safety is maintained by avoiding any connection with the lower part of the boiler. Each syphon is open at the top and the rear, providing communication in the water spaces that creates rapid and complete water circulation within the boiler, and this action with the water, and the location of the syphons in the hottest part of the firebox, adds materially to the total evaporative capacity. In order to prevent the creation of dead pockets, the syphon is planned so as to draw the hottest water from the bottom, rear, and side spaces of the firebox; and the circulation of the water through the syphon eliminates the large fountain of steaming water which forms in the crown plate in the back water spaces in boilers not equipped with syphons. The syphons provide a safety factor by flooding the crown plate in case of low water. So far, tests have been made only with model locomotive boilers, but they have sufficed to show that the device has an important effect in improving the water circulation of the boiler, and produces other beneficial results.

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Social Paddington

The airy and well-lit concourse of Paddington station, known as "The Lawn," has frequently been used to attract the eye of the public. For instance during the Coronation week it was decorated with masses of flowers, as a foretaste perhaps of the kind of country served by the West of England line. The musical taste of the English nation shows a marked leaning towards brass bands—a failing that has not escaped the observant eyes of the G.W.R. authorities. We were rather surprised, however, when recently emerging from the depths of the Bakerloo tube to hear a thunderous finale of martial music followed by sounds of enthusiastic applause. Gaining "The Lawn" we found a scene more reminiscent of the promenade at Bournemouth than of a prosaic railway terminus. A smartly uniformed G.W.R. brass band complete with a conductor of impressive mien was performing for the benefit of an enraptured audience. Those who had not managed to secure one of the many seats offered by the rows and rows of benches, paraded round and round the concourse. The whole scene had a gay and almost continental flavour, particularly as refreshment was available close at hand. Our eyes were still bulging when the official collector descended upon us and bore away our tuppence. The G.W.R. should be careful however lest the amenities of Paddington itself deter the holidaymaker from going farther afield.

Early Railway Telegraphy

IT was fortunate for the success of the railway that its introduction as a means of public conveyance almost coincided with the first attempts to make a practical electric telegraph, without which the development of the new method of transport would have been seriously impeded. In the early years of the Liverpool & Manchester, London & Birmingham, and Great Western Railways many difficulties arose from the impossibility of knowing the positions of the trains, rendered all the greater by the fact that higher speeds and heavier loads were combined with the principle of the fixed track for the vehicles, steering aside to avoid an obstacle being impossible, a disadvantage from which road transport was free. From this arose the idea which at first prevailed that double lines were essential to safety and convenient working, although the traffic expected might not justify them. As soon as its phenomena came to be studied seriously, it was seen that the mysterious force called electricity, which travelled with such extraordinary velocity through metallic objects, might possibly be used to communicate intelligence at a distance, and even in the seventeenth century hints to this effect seem to have been made. As long, however, as frictional electricity was the only form known, nothing of much value came of the idea, the nearest approach to a practical telegraph worked by frictional electricity being apparently that constructed by Sir Francis Ronald at Hammersmith in 1816, and described in our issue of July 17, 1936. In 1800 Volta had discovered the primary battery, producing what was long termed galvanic electricity, while the discoveries of Oersted in 1819 on the action of an electric current in a conductor on a magnetic needle, the subsequent invention of the multiplier (or galvanometer) by Schweigger, and the electro-magnet by Sturgeon, inspired several persons with the idea of making a successful telegraph, among others the French physicist Ampère, the German scientists Schilling and Steinheil, the American artist Morse, and two Englishmen, Charles Wheatstone and William Fothergill Cooke. To the two last-named is due the first telegraph tried on a railway in this country, and, as the centenary of its first use—between Euston and Camden on July 25, 1837—fell on Sunday last, we publish on page 191 a brief article on the work of Cooke and Wheatstone written by a contributor who has devoted considerable attention to the study of this subject. Moreover, on our Scrap Heap page we include some interesting and hitherto unpublished extracts from London & Birmingham Railway board minutes and correspondence which Sir Josiah Stamp quoted in an article he contributed to *The Times* of Saturday last.

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Double Perversion

MOST engineers, when they have time to think of anything beyond the completion of the particular job they happen to have in hand, would agree that the articles of association of the Institution of Civil Engineers—the senior engineering association of the world—correctly define the purpose of engineering as "directing the great sources of power in Nature for the use and convenience of man." It must surely be their preoccupation with the particular that seems to blind them to the general fact that at the present time engineering is being perverted from its proper purpose. In our correspondence columns this week we publish a long letter from Mr. Alexander H. Hayes, F.C.S., Hon. General Secretary of the Engineers' Study Group on Economics, which, after first stating clearly why the Group was formed, immediately goes on to describe its multifarious activities, not one of which has any relevant bearing on the defined objective.

Initially, it appears, "a representative group of engineers and scientific workers," dissatisfied with the fact that the community was not enjoying a standard of living and leisure commensurate with the potential advancement for which science and technology were responsible, met "to discuss why the paradox arises and how it can be solved." The premise, it should be noted, was quite clearly stated: the potential production of modern industry was not being fully used "for the use and convenience of man." That was the starting point—the fact upon which this group of engineers was agreed—and how to correct the perversion was the self-elected task of the Group. What came over that original Group it would be interesting to learn, for now, instead of doing what it set out to do, it is apparently spending all its time and energy collecting evidence to prove the truth of the very assumption which was its *raison d'être*, and which is so obvious today, to intelligences far less highly developed than that of engineers and scientific workers, as to require no proof.

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Local Railway and Traders' Conferences

THE recent appeal of the Association of British Chambers of Commerce, urging its members throughout the country to endeavour to stimulate interest in the work of the local conferences of railway companies and traders, is a reminder that a number of these bodies is still functioning efficiently. These conferences owe their origin to representations made by traders to the Rates Advisory Committee in 1920, when they urged that local tribunals should be established as conciliation boards, without any coercive powers, primarily in order that any trader having a grievance might rely upon its being suitably discussed and considered. The committee supported the adoption of this proposal for the purpose of promoting mutual understanding between the parties, and suggested the name of "Railway and Traders' Conferences" in order to distinguish them from other bodies. Subsequently Section 28 (i) of the Railway Act, 1921, gave the Rates Tribunal power to determine any questions concerning the constitution of such local joint committees, their functions, and the centres at which they are to be established. These powers were never exercised, however, as in 1922 the Association of British Chambers of Commerce, after consultation with other national traders' organisations, began negotiations with the railway companies for the establishment of such conferences. As the result, in May, 1923, a scheme was unanimously agreed between the parties which provided for Great Britain to be divided into 28 areas, and for a conference to be set up in each, representative of the railway companies in that area and local traders. The underlying object of their formation was then stated to be the promotion of mutual understanding between the carriers and the public.

The scheme provided that the conferences should consider local matters of a general kind affecting traders within the area. These include the service, conditions and charges for the conveyance of traffic by merchandise or passenger trains; matters affecting the collection and delivery of traffic; and dock charges and facilities. It was also agreed that general questions of principle might be discussed informally, but that no official resolutions should be passed as it was considered that these subjects would be more appropriately dealt with by the national traders' organisations. The wisdom of this decision became apparent between 1923 and 1927, when the multitudinous

questions arising from the introduction of standard charges and standard revenue were handled so efficiently by the Traders' Co-ordinating Committee, a body which was specially formed for the purpose, representative of all the principal national traders' organisations. It must be admitted, however, that generally speaking, the conferences have not fulfilled the high expectations which were entertained upon their formation. A report presented to the annual meeting of the traders' panels in March last indicated that the conferences were still active in certain areas, but others had discontinued the holding of regular meetings, and some had actually disbanded. These conferences could be of considerable mutual assistance in such matters as the forecasting of future trade movements, indicating the probable future demands for rolling stock in the area, and discussing local services and accommodation. The association also suggests that they might prove of very great value in connection with any future scheme for the co-ordination of transport, and it is to be hoped that its appeal will be successful in reviving interest in the work of the panels.

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Rail Speed Consciousness

THE recent publication by the L.M.S.R. of a table giving details of the number of runs that its timetables showed as being performed daily at start-to-stop speeds of over 60 m.p.h. is a reminder of the increasing extent to which British railways are becoming speed-conscious. Our associated publication, *The Railway Magazine*, could probably claim some share in having aroused this general interest in speed statistics, and was first responsible for presenting annually in tabular form lists of runs scheduled at 55 m.p.h. and over, as well as other tables of fastest and longest runs, British, European, and American, which subsequently became incorporated in *The Railway Year Book*. Interest is now being taken by the railways themselves in these figures to such an extent that surreptitious parings of minutes off train schedules have at times suggested that a desire to add to the list of mile-a-minute runs has been a potent factor in bringing about these modest improvements. Trivial though such accelerations may be, however, the underlying principle is one of considerable importance. It is that we have reached the age in which mile-a-minute rail transport from point to point is to be expected as a reasonable speed.

And yet, although the number of runs in Great Britain scheduled at 60 m.p.h. and over is steadily on the increase, but few cities can be reached from London at this overall speed; indeed, Newcastle and Bristol were the only two cities of major importance which enjoyed transport at over a mile-a-minute to and from the Metropolis, the former by the L.N.E.R. Silver Jubilee and the latter by the G.W.R. Bristolian, until the L.N.E.R. Coronation and the L.M.S.R. Coronation Scot brought Edinburgh and Glasgow within the 60 m.p.h. orbit. In October, with the L.N.E.R. West Riding Limited, Leeds also will be included, but there is no true mile-a-minute transport between London and Liverpool, Manchester, Birmingham, Sheffield, and many other large British cities. Many of the runs timed in Great Britain at 60 m.p.h. and over form a part of longer journeys over the remainder of which considerably lower standards of speed obtain; and though by reason of speed restrictions, heavy gradients, and necessary intermediate stops, this is to a certain extent inevitable, the mile-a-minute transport that is of the greatest value to the passenger is not the single spectacular run that forms a part only of a longer journey, but that on which the entire journey is completed at this speed level. In Germany there is not a single city of note that cannot now be reached from the capital at an average speed of well over 60 m.p.h.; Hamburg, Hanover, Cologne, Frankfort-on-Main, Frankfort-on-Oder, Nuremberg, Munich, Stuttgart, Breslau, Dresden, and numerous others are found within this high speed range. Similarly in France, it is possible to travel from Paris to Brussels, Nancy, Strasbourg, Dijon, Lyons, Bordeaux, Havre, Lille, and various other cities at over 60 m.p.h., Marseilles, 535 miles distant, being the only important city not so attainable, though the best average speed between Paris and Marseilles has now risen to 59.4 m.p.h.

In this connection it is curious that in the United States of America, where hitherto interest in speed has been confined to overall speeds between terminal points, railways are becoming speed-conscious, as well they may, of some of the feats of speed between stops that have been introduced into their timetables during the last year or so. Here again the tables of North American speeds in both *The Railway Magazine* and THE RAILWAY GAZETTE, which have been widely quoted in the United States, have not been without their effect. In particular the Pennsylvania Railroad has suddenly awakened to the fact that it has the best speed record in the North American Continent, and is now operating the fastest schedules in that country in which either steam or electricity are concerned, and has been doing much recently to advertise the fact. Not content also with steam schedules in which start-to-stop speeds as high as 75 m.p.h. are required, the Pennsylvania has been experimenting over its high speed stretch between Fort Wayne and Chicago to such purpose that the entire run of 104 miles between Fort Wayne and Valparaiso, Indiana, has been made at an average speed of 90 m.p.h., with maximum speeds up to 107 m.p.h., and it claims the former feat as the fastest that has ever been achieved on rails for so great a distance with standard steam equipment.

Another way in which the American railways have been attracting attention both to their locomotives and to their speeds has been by means of special excursions from New York and other great cities to locomotive works, which have attracted extensive patronage. As described on p. 209 of this issue, the New York Central recently organised such a trip, in which 3,200 persons—and ten per cent. of them ladies—participated, from New York, Boston, Buffalo, and elsewhere, to the works of the American Locomotive Company at Schenectady, and one particular attraction was that between Harmon and Albany the New York specials were run at an even higher average speed than the famous Twentieth Century Limited. Not to be outdone, the Pennsylvania organised a similar trip from New York to Altoona, far away in the Alleghanies, a total round of 652 miles at an average of 56 m.p.h., all stops included, and on a schedule equal to that of the Broadway Limited. Another similar "wonder trip" from Chicago was recently operated between Fort Wayne and Gary at a higher speed than the Detroit Arrow—the world's fastest steam train—to the great delight of hundreds of enthusiasts who travelled with watches in their hands. So rail speed consciousness is being fostered in the minds of the American public, and although the Great Western Railway of this country, with its Swindon works excursions and five shilling trips on the Cheltenham Flyer, may well claim the paternity of this description of railway education, and the L.N.E.R., with its frequent exhibitions of rolling stock, has inaugurated a new and inexpensive method of developing it, the Americans appear now to be carrying this propaganda to the most comprehensive lengths.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

An Experiment in Publicity

Bombay, Baroda and Central India Railway,
General Traffic Manager's Office,
Publicity Department, Church Gate,
Bombay, July 15

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—We have recently concluded a very interesting experiment in publicity and the details may be of some interest to your readers. As you will no doubt remember, we inaugurated our new train, the Flying Ranee, on Saturday, May 1, and its popularity was at once evident, the daily and week-end trains quickly breaking record after record in regard to numbers of passengers carried. The climax was reached with the train which left on Saturday, May 22, when some 1,400 passengers left Bombay in one train.

Thereafter, and as the weather began to break before the monsoon set in, our figures for numbers of passengers travelling gradually decreased until the figures for Saturday's train (always more popular than the daily train, as week-end tickets are issued) dropped to a constant figure of about 320 week-end tickets sold. We then decided to make an experiment in an endeavour to find out whether a publicity campaign would bring about an increase in traffic despite the usual very bad monsoon weather which is experienced at the seaside resorts served by this train.

N. Gadai & Co., a local firm of tea merchants, was asked and agreed, as part of a publicity campaign of its own, to give free of any charge a 1½-lb. gift packet containing an assortment of its three best teas, value approximately two shillings, to the first 1,000 passengers with week-end tickets leaving Bombay Central by the Flying Ranee on Saturday, July 3. We then had an intensive publicity campaign, for eight days only, of newspaper advertisement and press notes, cinema slides, cloth banners, posters, and door-to-door distribution of leaflets. The results were very gratifying, and fully paid for the expense involved, as, apart from the publicity value of the keen interest which was roused, we secured 115 passengers with week-end tickets more than the previous Saturday. It is also significant that with no gifts or intensive publicity during the following week, there was yet a further rise of 55 passengers with week-end and 100 with ordinary tickets on July 10, a week-end which began and was noteworthy throughout for its torrential rain. This increase can be attributed to the popularity of the gift scheme and intensive publicity done in the week previously. We can truly say therefore that it " pays to advertise "!

Yours faithfully,
G. DE P. LEEPER
Publicity and Advertising Superintendent

Proving the Axiom

Engineers' Study Group on Economics,
Hazlitt House, Southampton Buildings,
Chancery Lane, London, W.C.2
July 5

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Referring to the encouraging remarks in your editorial notes of July 2, in which you enquired whether it is " the purpose of the Study Group in Economics to show for the benefit of the engineer in particular and mankind in general " what prevents the direction of the great forces of power in nature for the use and convenience of man, I should like to give to your readers some particulars about the aims and organisation of the E.S.G.

The primary objective of the Engineers' Study Group on Economics was expressed at an early meeting as follows: —

We, as a representative group of engineers and scientific workers, are dissatisfied with the fact that the community is not enjoying a standard of living and leisure commensurate with the potential advancement for which science and technology are responsible, and are meeting to discuss why the paradox arises and how it can be resolved.

It was realised at the outset that the objective could be attained only by means of a dispassionate and scientific method of approach; and, further, that to presume the possibility of a higher standard of living, however wide might be the belief in the potentialities of science and technology, without positive evidence, would be unscientific. The importance of a survey of the community's productive capacity, in order to give validity to any ultimate proposals for solving the problem under consideration became apparent at an early date.

In view of the complex nature of the problem and the extensive field to be explored, it was obviously advisable to use any relevant available information of a dependable nature and to avoid as far as possible duplication of work being done by other investigators. This policy has been followed throughout and valuable assistance has been received from numerous organisations and individuals outside the membership of the group.

To facilitate the work of investigation the members formed themselves into group sections and sub-sections for dealing with different aspects which could be considered separately. The broad divisions adopted were: (A) Enquiry into production, present and possible. (B) Enquiry into the working of the economic system. (C) Enquiry into methods of propaganda. (D) Organisation of the internal activities of the sections. (E) Enquiry into the ethical and cultural questions involved. (F) Co-ordination of the group's work with other research bearing on social and economic questions.

Sub-divisions of the work of the Sections A, B, and C on the following lines has been found desirable: —

A. 1.—Investigation of family budgets to determine amount and type of goods required at various income levels.

A. 2.—Investigations into the general or total potentialities of production, beginning with certain specific items, *e.g.*, housing, heating and lighting, food, clothing, transport.

A. 3.—Consideration of various suggested projects for immediate adoption, *e.g.*, transport developments, slum clearance, water supply.

A. 4.—Survey of available technical ability.

A. 5.—Organisation of industry: Analysis of proposed schemes.

B. 1.—Analysis of social and economic systems, existing or proposed.

B. 2.—Synthesis of a social and economic system to give effect to the group's aims.

C. 1.—Editorial prepartion of reports and matter for publication.

C. 2.—Direction of contacts with other organisations.

C. 3.—Analysis of methods of persuasion in the light of recent psychological knowledge.

The group as such is attached to no political party and to none of the organisations promulgating specific reforms though members individually may have their own various political attachments. Group alignment with any preconceived doctrine, before the progress of the enquiry has justified conclusions, would be prejudicial to a scientific survey.

While the group was formed initially of engineers and scientific workers, its most active membership includes also men and women of other professions and occupations. The primary qualifications for useful co-operation is willingness to subordinate personal predilections to the necessity for a scientific approach to every aspect of the problem.

I have no doubt that there are many amongst your readers to whom this method of approach would appeal and we wish to extend to them a hearty invitation to join us.

Section A in particular needs advice in connection with transport problems, and the other sections are equally ready to welcome new members.

Yours very truly,
ALEX. H. HAYES
Hon. General Secretary

[We comment on this letter in an editorial article on page 184.—ED. *R.G.*]

PUBLICATIONS RECEIVED

Handbook for Electric Welders. Edited by J. H. Paterson, D.Sc., F.I.C. Sixth Edition. London: Murex Welding Processes Limited, Ferry Lane Works, Forest Road, E.17. 5½ in. × 8¼ in. 188 pp. Illustrated. Price 3s. net.—The first edition of this handbook was published in 1932, and within a few years five further editions became necessary owing to the rapid adoption of welding in the steel and metal industries. As compared with the earlier editions a good deal of elementary instruction has been omitted because, as explained in the introduction, "such instruction is now easily obtained at most technical institutes and in the training departments of firms specialising in welding." This also accounts for the replacing of general by more specialised matter. There is much to be said for such changes, but we wonder whether the title of the book is still justified, conveying as it does the idea of being a handbook for the welder, *i.e.*, the welding operator and foreman, while in fact this book is now more for the welding engineer.

The subjects, which are dealt with by various authors in eight independent chapters, include the electric arc, a.c. and d.c. welding, types of electrodes, types of welded joints, the welding of special steels, metals and alloys (also cast iron, stainless steels, copper and bronze), metallurgical studies, physical properties and mechanical tests, calculation of the strength of welded joints, and the systematic control of welding. The data given in the eight parts of the appendix will be useful for reference purposes. They include the description of welding tests required by the Board of Trade, Lloyd's Register of Shipping, the British Corporation Register of Shipping and Aircraft, and British Standard Specification No. 538—1934 for Welded Steel Structures. A list of British Standard Specifications relating to welding already mentions nine such publications, and three more in course of preparation.

Railway Engineers' Oxy-Acetylene Welding and Cutting Conference. The British Oxygen Co. Ltd., London, N.W.2. 7½ in. × 9½ in., 55 pp., illustrated. Price 5s.—The programme of the conference* held by the British Oxygen Co. Ltd. in October, 1936, was divided into two sections, dealing respectively with the applications of oxy-acetylene welding and cutting to locomotive work and to permanent way maintenance. In the first group the main subjects were the welding of copper fireboxes and cast-iron cylinders and locomotive frames, while in the second group the resurfacing of worn crossings, rail bonding, the welding of rails, the treatment of battered rail ends, and other permanent way problems were discussed. The conference was attended by about 80 delegates, whose names are given, including a number of overseas railways' representatives. Lists of lantern slides and films shown in the course of the discussions are included, also a general subject index.

Although some minor errors in reporting are apparent, the volume as a whole contains many valuable practical suggestions, based on welding and cutting experience in Great Britain and in other countries. While the oxy-acetylene processes, in accordance with the aims of the conference, were the main subjects of discussion, views were also exchanged regarding experience with the electric arc and other welding methods. The figures given for their relative costs will be of special interest and will add to the value of this report as a reference book to railway and welding engineers.

* See THE RAILWAY GAZETTE, October 23, 1936.

Ce Que Disent Nos Pierres (The Story of our Stones). Part I, Western France. By François-René Bernard. Paris: French State Railways. 9 in. × 7¼ in. 134 pp. Illustrated with 64 sketches by the author. No price stated.—This guide to the architectural beauties of France is an intentional break with normal guide-book procedure, designed to relieve the reader of the wealth of dates and technicalities with which such productions usually assail him. The aim of the book, as explained in an illuminating preface by Robert Rey (Inspecteur Général des Beaux Arts et des Musées) is to present a more comprehensible picture of what the buildings stand for than the average beholder can glean from a recital of architectural periods and technicalities. Such descriptions tend to give the false impression that a church or a castle was built in a series of self-contained stages, each terminating neatly with a century and its successor following without overlapping of style. The author of "Ce Que Disent Nos Pierres" replaces such misleading catalogues with a few dates selected to show the progressive evolution of the buildings through the years. Sometimes they are the year of important architectural additions and changes; and sometimes the date of an historical event that has influenced the building in its status or associations.

So far, the stones are allowed to speak for themselves, as the title of the book implies; but the last word lies with the famous authors and scholars of France, selections from whose works are quoted for every building. Thus, a few lines of Théophile Gautier conjure up the cathedral at Bayeux. Taine, in twelve words, creates for the imagination a clear-cut picture of the Cathedral of St.-Julien at Le Mans; and so on throughout the book, which deals with 64 monuments and buildings of Western France, from the Neolithic stones of Carnac to the new Trocadéro in Paris.

The full-page sketches by the author with which the book is illustrated are in keeping with its general intentions. Here, too, there is broad significance instead of fussy detail. These drawings capture and perpetuate the first impression made upon the artist by the scenes he visited; they are, so to speak, the outlines to which the stones themselves supply the colour and detail.

Grafton's Supplementary Catalogue.—We have just received from Grafton & Co., of Coptic House, Great Russell Street, London, W.C.1, Catalogue No. 191, which is a supplementary catalogue to railway books and pamphlets, maps and plans, portraits, medals and tokens, and railway prints. As recently as June 18 last we recorded the publication of this firm's Transport Catalogue to which the present list is additional. It includes many scarce items from the collection of Mr. John Phillimore who has recently disposed of a number of duplicates from his well-known and extensive files.

Showcase Models.—Illustrations of specimen showcase models are given in two folders which we have received from Twining Models Limited, Pike Lane, Northampton. Mechanical and ship models, of both modern and historical prototypes, are a speciality of the firm, and among those illustrated are the Newcastle and Carlisle locomotive *Comet* of 1835, the Great Western 4-4-0 *Gooch*, and the L.N.E.R. 4-6-4 electric locomotive No. 13. Rolling stock—coaching and freight—is also represented, and several of the models were commissioned by the builders of the prototypes. The firm also makes architectural models, representing individual buildings or complete factory, dock, and town layouts.

The Brown-Firth Research Laboratories. Sheffield, 1: Thomas Firth & John Brown Limited. 11¼ in. × 8¾ in. 71 pp. Illustrated.—These laboratories are situated centrally to many works of the special steel industry in Sheffield and are staffed by men from various universities. The work carried out is the consideration of problems in the development of processes, modernisation, or utilisation of products, and combines the industrial and scientific needs of each case. Such matters as the technology of rust, acid, and heat resisting, high tensile, tool, spring and other steels for railway and other engineering work are dealt with. These matters and special materials, such as Staybrite steel, are discussed in this excellently produced volume, which then proceeds to describe the different departments of the laboratories, such as the library, lecture theatre, and the various individual laboratories. The latter are for experimental steel-making, heat-treatment, pyrometric work, and testing in its various forms, and there are also metallographical, microscopical, physical, chemical, X-ray and other laboratories, the work of each of which is briefly outlined. The museum, too, must not be forgotten. In the latter part of the volume, the publications emanating from the laboratories, and a complete catalogue of the library are tabulated.

THE SCRAP HEAP

STILL OWING

A letter was recently received by the G.W.R. from Mr. Owen Owens stating he was no longer responsible for demurrage charges on a wagon as he had transferred his interest in the traffic to Mr. Evan Evans. So Mr. Evan Evans is now owing what Mr. Owen Owens was owing.

* * *

Within a few days of the installation by London Transport of the new change-giving and ticket-issuing machines at Piccadilly Circus station they proved an unexpected source of profit. An American family and a Canadian family each spent 6s. 0½d. in extracting an entire series of tickets to take home as souvenirs, so that holders of London Transport " C " stock may expect to receive the benefits of most of this 12s. 1d. of unearned income.

* * *

Mr. William B. Reed, familiarly known as " Uncle Billie," was for more than 50 years an employee of the N.C. & St. L. Railroad in the U.S.A. After his death officials of the railway ornamented his grave at Nashville, Tennessee, with a railway wheel and a section of rail. The axle hole was covered by a plate bearing a suitable inscription.

* * *

THE WELSH LANGUAGE

At a meeting of the Cambrian coast branches of the Railway Clerks' Association, held at Barmouth on July 26, it was stated that instructions had been given to all employees of the G.W.R. in the Central Wales division to refrain from using the Welsh language when on duty. A strong protest against this instruction was made by Councillor Oswald Thomas, Aberystwyth, who presided, and by other speakers.

* * *

" HITCHING HIS WAGON TO A STAR "

The Manchester *Daily Dispatch* recently discovered the world's record railway traveller. " Driver of the Comet, the crack Manchester-London express, George Mullins, of Longsight engine sheds," we read, " who drove the Comet for the last time last night before retiring, estimates that since 1906 he has covered more than 800,000,000 miles with goods and passenger trains." Lest we should disbelieve the figure, the *Daily Dispatch* reinforces it with the heading " Travelled 800,000,000 Miles." A reader who sent us the cutting has devoted a little mathematical research to the matter, from which he has calculated that Mullins got over the modest trifle of 70,702 miles in each working day of 8 hours, at an average speed of approximately 8,838 m.p.h. It would seem that the Comet that he drove must have been celestial rather than terrestrial.

* * *

WHAT THE CHAIRMAN SAID!

It is mentioned in the Jubilee Memorial brochure (1875) of the Stockton & Darlington Railway that " when the first rail of the first railway near Stockton was laid by Mr. Meynell, the Chairman of the company, a boy went about the streets of Stockton crying " Speech of Mr. Meynell, &c., 1d." A gentleman purchased one of the sheets purporting to contain the speech, but finding it a blank exclaimed, " Why, you little rascal, there's no speech here." " No. Sir," replied the lad, " because he said nought."

* * *

EARLY CAMPING COACHES

Camp cars for pleasure and fishing parties are the latest novelty on the Erie Railway. They are fitted to accommodate nine persons, and provided with sleeping and cooking coaches.—*From the " Chicago Railway Review " of September,* 1875.

The First Railway Telegraphs

CAUTIOUS DIRECTORS

In an article in *The Times* for July 24, Sir Josiah C. Stamp, Chairman and President of the Executive, L.M.S.R., gave some interesting and hitherto unpublished extracts from board minutes and correspondence referring to the first trials made with telegraphic apparatus on railways in Great Britain, a subject on which an article appears on page 191 in this issue. From these it appears that William F. Cooke tried to get financial aid for experiments from the Grand Junction Railway in February, 1837, for a minute of that company's board records that:—

Mr. Earle having reported an application from Mr. Cooke for assistance from this company in the trial of an invention applicable to telegraphic communication,

It was resolved,

That it does not seem to be desirable that the company should incur an expense, which may possibly be considerable, for the object proposed by Mr. Cooke.

The London & Birmingham authorities, however, gave him leave to experiment, and he had to write to them in July concerning a visit paid by certain directors for the purpose of fixing a date for witnessing experiments, expressing regret that private arrangements should already be so far known, as he had taken every precaution to avoid publicity. " As directors of your company I, of course, acquiesced in their wish," he wrote, " but I want your sanction before I make the requisite preparations." The visitors had asked him to request the attendance of Professor Charles Wheatstone, with whom Cooke had entered into partnership in May, and in a letter dated July 17, 1837, Cooke speaks of the experiments as " ours." Robert Stephenson inspected the apparatus and Cooke had to write complaining that his wires between Euston and the Camden engine house had been disarranged, saying: " From their exposed situation along the road they are necessarily beyond my entire control, and are subject at any moment to injury either from wantonness or accident. . . . An accident of the present description is liable to happen when 4 great lengths of wires are stretched along a road frequented by numerous workmen."

The well-known trial took place on July 25, 1837, and it is on record that Cooke and Wheatstone having been " authorised to make further trials, the result of repeated experiments at different times and under various circumstances had been so satisfactory as to decide the Engineer strongly to recommend to the company a trial on a more extended scale and to secure for this object the services of Mr. Cooke."

The Chairman later reported that Cooke was prepared to carry the telegraph to Birmingham, supervise its installation and instruct the necessary staff. This was on condition that a new experiment between Euston and Harrow should prove satisfactory. The company were given prior right to his services, but he did not engage not to go elsewhere. He was given a party of picked men under his sole direction and the necessary materials were to be provided " in sufficient quantity to prevent delay," the wire to be " ordered instantly." He was also to be given two or more intelligent clerks to come under his daily instruction, and power to spend up to £100 in further experiments.

The board, with great caution, before adopting any resolution, desired an estimate of the probable expense of laying down a line for telegraphic communication between Camden and Harrow, and on October 11, on further reflection, intimated to Cooke that they would " limit the trial of his Magnetic Telegraph for the present to the portion of the Railway between Euston and Camden stations." Cooke thereupon took a good deal of the apparatus away, paying the railway one-half of its cost.

It was on the Great Western Railway, however, that the first regular use of Cooke and Wheatstone's apparatus was made, reaching Slough in 1843 with the extension of the railway. But progress from the purely experimental stage was slow, judged by modern standards, for it was not until 1845, when others had become really active that Euston was re-convinced. for the London and Birmingham board resolved:—

That the Electric Telegraph be forthwith established by Mr. Cooke between the Euston and Camden Stations, and to be paid for at the same average rate per mile that he is allowed by contract for the Northampton and Peterboro' line.

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

SOUTH AFRICA

Financial Results, 1936-1937

The S.A.R. & H. results for the financial year ended March 31, 1937, show a surplus of £1,730,482 of revenue over expenditure after allowing for special appropriations of £850,000 to Betterment Fund, £487,000 deficiency in Pension and Superannuation Funds, £1,000,000 Rates Equalisation Fund (which includes the Wages Equalisation Fund), £250,000 reduction of branch line capital, £1,250,000 renewals fund, £1,226,274 responsibility allowance including refund of the 1932-33 temporary wage deduction and cut in piecework bonus earnings (April, 1931), £250,000 writing out of capital account discount and expenses on pre-Union capital, and £26,930 to writing down the value of obsolete aircraft. Revenue from transportation services for the year totalled £31,892,791, an increase of £1,842,937 on the previous year. Railway working expenditure increased from £19,657,616 to £20,593,860.

Further Johannesburg Railway Improvements

As a result of discussions between Mr. O. Pirow, Minister of Railways & Harbours, and the Mayor of Johannesburg and certain city councillors, instructions were given to the City Engineer and the Acting General Manager of the Railways to enter into negotiations aiming at an exchange of land between the city council and railway administration with a view to removing to another site a portion of the railway activities now carried out at Kazerne. This is to release a portion of the land now occupied at Kazerne, enabling the city council to provide additional traffic outlets from the centre of the city to the north. The Kazerne goods depot (Natal yard) will be moved to a new site at Prospect, where a marshalling yard will also be provided, and in addition the doubling, realignment, and regrading of the Rand mineral line between Jupiter and Booysens will be undertaken, the whole scheme being estimated to cost £510,000. The land required at Prospect will be handed over by the city council, and in addition a sum in cash of £300,000, in exchange for the area relinquished at Kazerne. The work will probably take three years, and be the first instalment of a larger scheme for the complete development of Kazerne, which will, however, retain a goods depot to serve the surrounding parts of the city.

Railway Housing Commission

At a conference on June 25 between the Minister of Railways & Harbours, Mr. O. Pirow, and representatives of the staff associations of railway employees, the Minister stated that he was not prepared to agree to any departure from the agreement entered into between himself and the staff associations on August 7, 1936, whereby, in return for the concessions specified in that agreement, the staff representatives undertook not to submit during the period of the agreement any "major" claims for improved wages. He was, however, prepared to appoint a commission to inquire into and report upon housing conditions of the staff.

The staff representatives, while reiterating their intention to abide by the agreement, urged that some allowance should be extended to the staff to meet the increased cost of living, particularly in the matter of house rents. The Minister said that no proof existed of any appreciable increase in the cost of living, and he was satisfied that, at the present time, no case existed for considering any such allowance.

It was finally agreed that the commission as suggested by the Minister should be appointed. The commission will consist of a senior railway official as chairman; a member of the public service with specialised knowledge of economics; two members and alternates to be nominated by the combined staff associations representing the railway staff.

ARGENTINA

Institution of Railway Signal Engineers (South American Branch)

A meeting of the above branch was held in Buenos Aires on June 10, at which Mr. F. E. Goss read a paper by Mr. H. M. Proud, Chairman of the parent institution in London, on "Some Notes on Power Signalling in the 20th Century," illustrated by lantern slides. Mr. J. L. Partington, Chairman of the Branch, presided. The paper dealt in a comprehensive manner with the development of power signalling in Great Britain and the U.S.A. under the following sub-headings; early automatic signalling; power type interlockings; track circuits; signals; train stops; power-operated points; power frames; illuminated diagrams; circuits and train description.

Mr. M. F. Ryan on Air Travel

At a meeting of the Argentine Association of English Culture, held in Buenos Aires on June 10, Mr. M. F. Ryan, C.B.E., M.Inst.C.E., F.R.G.S., General Manager, Buenos Ayres & Pacific Railway, gave a lecture entitled "From the Cape to Cairo by Air." Mr. Ryan's journey, last year, from Buenos Aires to London followed a somewhat roundabout route via Rio de Janeiro, Cape Town, Cairo, Greece, the Balkans, Hungary and Germany, a distance of over 12,000 miles. With the exception of the sea voyage from Rio to Cape Town, and a short run between Budapest and Vienna by railcar, the entire trip was made by air. After describing the route, Mr. Ryan said that, compared with railway and steamship journeys, long-distance air travel was attended by many discomforts, the chief being air sickness. The overwhelming argument in favour of flying was, however, the annihilation of distance; 100 m.p.h. was considered slow, and double that speed was aimed at in the immediate future. He concluded with a reference to his return journey to Buenos Aires by the *Graf Zeppelin*.

Wheat Prospects

With the probability of handsome prices being paid for wheat for some time to come, it is not surprising that there is expected to be an increase of at least 10 per cent. in the area put under cultivation in Argentina this year over last, which turned out so successfully. The weather up to now has been favourable, although the rainfall has been below normal for the time of year, but this has affected pastoral rather than agricultural interests. Growers are more prosperous than they have been for years, so it is only natural that more cereals should be sown, especially as remunerative prices are likely to continue, even if the crops in the Northern Hemisphere do turn out to be as good as expected at present. There seems to be little doubt that there has been a considerable increase in the area put under wheat in North America and Europe also, but stocks have to be replenished after the recent scare of bread famine so that big crops this year should not send down prices to previous low levels.

BRAZIL

Estrada de Ferro Oeste de Minas

Three stations—Folhados, Ivahy, and Monte Carmello—have been opened on the Monte Carmello section of the Patrocinio-Ouvidor extension of this railway. This section, to which reference was made in THE RAILWAY GAZETTE of May 7, although traversing mountainous country, follows the watercourses known as Ribeirão S. Felix, Corregos do Diogo, do Tucano, Indaya, Perdizes, and Macacos, leaving on the right the famous sulphurous waters of Serra Negra. Beyond Monte Carmello, where another 16 km. of line are already laid, the railway will cross the river Parahyba—which divides the States of Minas Geraes and Goyaz—by means of a reinforced concrete bridge 120 m. in length.

On completion of the extension to Ouvidor, the remainder of which is still in the hands of contractors, the railway administration intends to construct another extension from Mello Vianno to Barra de Funchal, which, strictly speaking, is a continuation of the old Paracatú railway connecting the Martinho Campos—Paraopeba, and

Divipolis — Garças — Campos Altos—Patrocinio lines. This will provide another 19 km. of line complete with terminal station. Unfortunately, the railway has not sufficient rolling stock at the moment to cope efficiently with the traffic expected from these new lines totalling some 111 km. in length, and requiring for their satisfactory working 14 locomotives and 111 wagons, the cost of which is estimated at 8,000 contos of reis.

Trains now leave Patrocinio for Monte Carmello at 2.30 p.m. on Tuesdays, Thursdays and Saturdays, returning at 9.0 a.m. on Mondays, Wednesdays and Fridays, in connection with the trains from Bello Horizonte. On the Paracutú branch a daily train service operates, serving Mello Vianna and Funchal stations, departure time from the former being 8.15 p.m. and from the latter 5.30 a.m.

UNITED STATES

Labour Disputes Still Alive

Although local labour difficulties, such as threatened strikes in the San Francisco and New York areas, have been surmounted, and the pension dispute has been amicably settled by the enaction of legislation in which both managements and unions concurred, difficult labour questions still confront the railway administrations. The engine and train crew unions have united in a demand for an increase of 20 per cent. in wages, and the remainder of the unions are seeking a 20-cents-an-hour (approximately 10d.) rise —together with guaranteed employment and annual holidays with pay. The railways, by reason of the abolition of the emergency supplemental freight rates, which became effective on January 1, are, despite increased traffics, earning scarcely more net than they did last year, and are in no position to deal as generously with their workpeople as these demand. So there exists the fear that an *impasse* may develop in the negotiations, which have thus far produced little in the way of common ground for agreement.

The unions are basing their demands on a novel argument, namely, that they are "conservative" in their political and economic philosophy; and that, if they are not successful in securing increased wages for the employees, the latter may be tempted to join the "radical" labour movement under the leadership of John L. Lewis, whose unions have caused so much unrest in the motor vehicle and steel industries. The train and engine crew unions have decided to poll their members upon a strike, to be called if the railways do not accede to their demands. This vote, however, is not meant to indicate the imminence of an actual stoppage of work, but rather as a means of strengthening the hands of the union chiefs in their negotiations. Thus far they have no mandate from their members for the demands they are making, but have made them solely upon their own initiative, a fact which gives them fewer grounds for unbending truculence than they would have after an affirmative strike vote by their members in support of these demands.

Rate Rise Case Completed

In some slight measure offsetting these wage demands—which would materially reduce railway net earnings, even if only slight concessions were made—is the railways' plea for minor readjustments in freight rates; these, if permitted, would add perhaps £20,000,000 to net revenues. The railways have completed the presentation of their case before the Interstate Commerce Commission, which has now taken the plea under advisement, with a prospect of a decision some time during the summer.

JUGOSLAVIA

New Belgrade-Zagreb Express Service

A new fast light-train service is to be introduced between Belgrade and Zagreb, a distance of 425 km. (280 miles). The Simplon—Orient express at present takes 7 hr. 10 min. over this section, which the new service is to cover in an even 5 hr., with four intermediate stops, one for traffic and the others for locomotive purposes; the overall speed will thus be 85 km. (52·7 m.p.h.). The weight of the train is to be limited to 120 tonnes, and one or more express locomotives are being streamlined to work it.

ABYSSINIA

Assab-Sardò Railway Construction

A private company has been formed in Rome with a capital of 20 million lire, for the construction of a railway between Assab and Sardò, the first section of the future railway between Assab and Addis Ababa via Dessié. According to reliable information it has been found that the construction of a motor road would not solve the problem of traffic between these places, which is estimated at 7,000 tons daily, and hence the decision to build the railway, to Sardò in the first instance.

The main difficulty likely to be encountered is in the carriage of the materials, and this problem has been solved by locating the railway close and parallel to the motor road which already exists. The line is to start from the plain of Margalé, south-east of Assab, where a large terminal is to be built, and which is to be connected by a double line with the port of Assab. The alignment then traverses the Cobghila region, and after following the Dochtumo river reaches Dabaiisima. After running along the foot of Mount Mussaali, it crosses the Bure, and the plain of Entocaiani, to attain the Manda area. Passing the plain of Hisso, the railway runs down to the Sardò region, the total length being about 260 km.

The ruling gradient is to be 1 in 67, and the sharpest curve 500 m. (25 ch.). It is estimated that with powerful locomotives it will be possible to handle trains of 700 tons at a speed of 90 km. (56 m.)p.h. and that in 24 hr. 10 trains will be sufficient to handle the required 7,000 tons of goods daily. The gauge is to be 1 m., and there will be a station every 30 km. complete with watering arrangements, signalling and sidings. The estimated cost of construction is 670 million lire, and the line should be opened some time in 1940.

MANCHUKUO

New Timetable and Station

On October 1 an entirely new timetable is to be introduced to cover the great network of railways throughout the country, with the principal object of speeding up the internal and international services. The Asia express, for instance, will leave Dairen at 9 a.m., call at Mukden (13.42—13.47), Hsinking (17.20—17.30) and arrive at Harbin at 21.30. In the opposite direction, the train will leave Harbin and arrive at Dairen 30 min. later.

On June 1 a fine new station was opened at Dairen; its construction cost Y. 2,933,000 (about £172,000) and occupied one year and nine months. The main building is finished outside in cream-coloured tiling, and the total floor area is 14,000 sq. m. A luxurious reception room is provided for distinguished passengers, and three spacious squares face the road entrance. This new station, one of the finest in the Far East, serves a city having a population of 500,000, as well as much through traffic from Japan and elsewhere overseas. Dairen is the headquarters of the South Manchuria Railway.

INDIA

Meghna Bridge, A.-B. R.

Remarkably rapid progress is being made on the construction of the new Assam-Bengal Railway bridge which will span the river Meghna at Bhairab Bazar. All the wells have now been sunk; the deepest of them is 147 ft. below low water level. Six girder spans out of the seven, each 331 ft. in length, have been floated out and placed in position on the piers. Four out of six of the 105-ft. approach spans have also been erected. The bridge, which it is hoped will be opened by the end of this year, will greatly facilitate travel between the Dacca and the Chittagong Divisions, and also with Assam. All passenger and goods traffic has at present to be ferried over the river. The steel work has been manufactured in India, and the work is being carried out for the Assam-Bengal Railway under the superintendence of Mr. H. S. R. Boyagian, A.M.Inst.C.E. (See illustrations on page 206.)

THE WORK OF COOKE AND WHEATSTONE

Sunday last marked the centenary of the first use of the electric telegraph on a railway in this country

(*From a correspondent*)

IT is difficult to estimate the extent of the debt railways owe to the coincident development of the electric telegraph, and it is therefore fitting that during the present week, which marks the centenary of the first experimental use on a railway of their telegraph, some memoir should be published of the work of Charles Wheatstone and William Fothergill Cooke.

William Fothergill Cooke

Cooke, the son of a medical man, was born at Ealing on May 4, 1806, and began a military career in India in 1826, but had to abandon it for reasons of health. He studied anatomy in Paris and anatomical modelling at Heidelberg where, in 1835, he saw a model of Schilling's telegraph apparatus belonging to Professor Möncke, which determined him to devote himself to telegraphy. Devising some instruments of his own, he came to London to discuss his ideas with Faraday and approached the Liverpool & Manchester Railway with proposals for a telegraph to be used through a tunnel; but the apparatus, said to have been arranged to give 60 signals, was considered too complicated. Cooke had very little knowledge of the fundamental properties of electric circuits, then in any case imperfectly understood, and Morse suffered under a like disadvantage, which led him to make his first instruments extraordinarily heavy and cumbersome. In 1837 Cooke was introduced to Wheatstone, who had considerably more theoretical knowledge of the subject and, as Cooke admitted, revived the latter's hopes of success and imparted new life to his ideas.

Charles Wheatstone

Wheatstone, who was born at Gloucester on February 6, 1802, was the son of a music seller, and learned musical-instrument making under his uncle in London, to whose business he and a brother eventually succeeded. He acquired a profound knowledge of acoustics and proposed a mechanical telephone to convey musical sounds, leading a contemporary writer to suggest a broadcasting system based thereon, to make musical performances available in the home. In 1834 he became Professor of Experimental Philosophy at King's College, London, and conducted researches to determine the velocity of electricity, and became eminent in several branches of physics. The stereoscope and English concertina are attributable to him, but the Wheatstone bridge—so named from his extensive use of it—was suggested by S. H. Christie in 1833. Wheatstone was an expert in cryptography, deciphering many MSS. in the British Museum, and gifted at devising delicate pieces of mechanism, which he employed to good purpose in telegraphy, leaving his name associated with several ingenious instruments and systems of working. After some hesitation he entered partnership with Cooke and they took out a joint patent in 1837, in which appeared the multi-needle telegraph, or "hatchment dial," requiring no knowledge of a code to work it.

Cooke made the acquaintance of Robert Stephenson and this was followed by the trial installation between Euston and Camden which was first used on July 25, 1837. The directors of the London & Birmingham Railway had given consideration to "the practicability of establishing a line of telegraphic communication along the railway between London and Liverpool" three years earlier, and Cooke was negotiated with to provide an estimate for the work as far as Harrow.* Wheatstone recorded his impression of the trial in July, 1837, in these words:—

> Never did I feel such a tumultuous sensation before as when, all alone in the still room, I heard the needles click and as I spelled the words I felt all the magnitude of the invention now proved to be practicable beyond cavil or dispute.

The London & Birmingham Railway Company did not then proceed further in the matter, mainly, it is stated, for the reason that this railway company's proposal to run the telegraph to Birmingham was countered by the refusal of the Grand Junction Railway to extend it to Liverpool. It therefore fell to the Great Western Railway to make an extended trial of the 5-needle apparatus between Paddington and West Drayton. Brunel advised the G.W.R. to make an arrangement with Cooke and Wheatstone, and an agreement was confirmed on May 24, 1838. The telegraph was working as far as Hanwell by April, 1839, and was completed to West Drayton in July of the same year. The large number of line wires was a great disadvantage, but, remodelled as a double-needle apparatus, the telegraph was extended to Slough on May 16, 1843, and opened for public service in April, 1844. In 1845 a sensation was created when a message sent from there to Paddington led to the arrest of Tawell for the Salt Hill murder. In the same year the Electric Telegraph Company was established, and Cooke was a director.

Telegraphic Railways

In 1842 Cooke published a pamphlet† entitled "Telegraphic Railways" in which he sought to show how the telegraph could be used to make railway transport safe and efficient, saying that the chance of accidents would be reduced to a minimum if punctuality and vigilance were "aided by a power of at any time surveying, as at a glance, the state and condition of all the trains on the road at numerous given points." For this purpose Cooke proposed to use apparatus similar to that he had installed on the Blackwall cable line in 1840, for communicating between the stations and the engine house, and in 1844 the Norwich & Yarmouth Railway, a single line, was worked on his plan. He strongly advocated single lines where traffic was light, saying that the telegraph would give them "the safety and efficiency now supposed to be exclusively within the reach of double lines." Experience showed, however, that telegraphic communication alone was much too exposed to risk of mistake, and on September 10, 1874, a head-on collision in which 25 lives were lost occurred between Norwich and Brundall, due to the carelessness of a telegraph clerk. The block telegraph system, however, was derived from the principles formulated by Cooke, and for single lines was later completed by the electric token idea, conceived by Edward Tyer in 1878, and now so well known.

Notwithstanding his close association with the first steps

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* An interesting account of these and other negotiations, with extracts from correspondence, appeared in an article in *The Times* for July 24, 1937, by Sir Josiah C. Stamp, extracts from which are given in our Scrap Heap columns.—ED. *R.G.*

† See THE RAILWAY GAZETTE of March 20, 1936, page 558.

in practical telegraphy in England, Cooke does not appear to have contributed anything further of lasting importance to its scientific development and is now far less remembered than other workers in that field. He died at Farnham, Surrey, on June 25, 1879. Wheatstone's reluctance to enter into partnership with Cooke seems to have had some justification. Differences soon arose between them concerning their respective contributions to the enterprise, and Professor Daniell, inventor of the Daniell cell, and Sir Marc Isambard Brunel, engineer of the Thames tunnel, were invited to arbitrate. Their award* made on April 27, 1841, said:—

> Whilst Mr. Cooke is entitled to stand alone, as the gentleman to whom this country is indebted for having practically introduced and carried out the electric telegraph as a useful undertaking, promising to be a work of national importance; and Professor Wheatstone is acknowledged as the scientific man whose profound and successful researches had already prepared the public to receive it as a project capable of practical application; it is to the united labours of two gentlemen so well qualified for mutual assistance that we must attribute the rapid progress which this important invention has made during the five years since they have been associated.

* Given in "The Railway Times" of May 8, 1841.

Both men "cordially acknowledged the correctness of the facts" in writing, but disputes again arose, leading to numerous controversial pamphlets on both sides and unfriendly correspondence, the greater part of which makes very unprofitable reading. Both, however, received knighthoods for their services to telegraphic science. Wheatstone died in Paris on October 19, 1875, from a chill contracted while experimenting with some apparatus for submarine cable working; he was buried in Kensal Green cemetery, London.

Within a few years of the first experiments he had made with Cooke, the electric telegraph had spread considerably in Great Britain and was seen to be indispensable to safe and economical railway working, for which the needle form of apparatus long continued popular. For the public services other designs were also used as time went on. The various private telegraph undertakings in this country were transferred to the State on February 5, 1870.

French Pedestrian Tunnels

In 1919 the construction of a 58-mile railway was begun through the heart of the Cevenne Mountains to join the town of Le Puy, the capital of Haut Loire, with Lalevade-d'Ardeche-Prades. The major works on this difficult line were mostly finished before one of the numerous financial crises with which we have all become painfully familiar put a stop to the whole undertaking. Among the biggest works completed was a double-line tunnel 3,690 yd. or just over two miles in length, which the inhabitants of the neighbouring village of St. Cergue petitioned to be allowed to use in winter time to avoid the hardship of gaining access from their secluded valley to the outer world over the high mountain roads. Whether their petition was granted or not we do not know, but certainly the railway leading to each end of the tunnel has not yet been completed, and indeed, but for 14-mile section from Le Puy to Le Monastier, the whole project is in a state of suspended animation. A picture of the villagers of St. Cergue walking through this gloomy tunnel in periodical processions headed by torch bearers was conjured up in our mind recently, when, from an electric train on the metre-gauge mountain section of the P.L.M. Railway that leads from the standard-gauge terminus of St. Gervais-La Fayette to the Chamonix valley, we noticed a footpath sharing a tunnel which the train traversed. So far as we know, this particular tunnel on the Chamonix line is unique in accommodating both railway and public footpath. The latter provides a means of access between the commune of Vallorcine and the rest of France, when avalanches and snowdrifts in winter time block the road through the pass above. It is a muddy and wet path, but dimly illuminated by electric lights in the tunnel which is 2,058 yd., or nearly a mile and a half long, and we should think would so daunt a solitary pedestrian that, if it is ever used, torch-light processions would be necessary. Incidentally, the level of the railway through this tunnel beneath the Col des Montets, 4,547 ft. above sea level, is the second highest in France.

THE "REICHSBAHN - ZENTRALAMT." — A ceremony recently took place at the *Reichsbahn-Zentralamt*, Berlin, under the chairmanship of President Emmelius, to mark the 30th anniversary of this Railway Central Technical Office. It was opened on April 1, 1907, with the name *Eisenbahn-Zentralamt* as part of the Prussian State Railways Administration, subordinate to the Ministry of Public Works; the Minister at that time was Paul von Breitenbach. The chief steps in establishing the *Zentralamt* were taken by a colleague of his, Wilhelm Hoff, himself later a Minister and now living in retirement at Münster, aged 86; he became the first president of the new organisation. Before it was set up much difficulty was experienced in coping with the requirements occasioned by the rapidly growing traffic on the Prussian lines, the axle-kilometres over which had increased 70 per cent. in 10 years, the number of locomotives 45 per cent. and the route mileage 25 per cent., with a corresponding increase in the work of the technical branches of the service dealing with designs, purchase of materials, inspection and so on. The plan then followed was to allocate certain general services to certain divisional managements, or *Direktionen*; thus Berlin took charge of the design and ordering of rolling stock, while Essen dealt with the coal supply for the whole of the western part of the system. This arrangement interfered with the proper local work of each management and hindered the Ministry in keeping sufficiently close touch with essential matters, so the idea, strongly advocated by Hoff, arose of setting up a special office, directly under the Ministry, to deal with all general technical matters affecting the whole State Railway system. A ministerial Decree of March 25, 1907, laid down the duties of the new organisation, which had 17 standing committees to discuss the details of the various sections of the work. In its first year it dealt with the purchase of a million *tonnes* of permanent way material, 7 million wooden sleepers, 1,468 steam locomotives, 3,810 coaching vehicles, and 23,000 wagons. The standardisation of signalling apparatus was most successfully effected. After the war the *Zentralamt* had much to do in restoring the railways to normal conditions. About 2,000 new locomotives were required annually for some years, and 60,000 wagons in 1921 alone. The establishment of the Reichsbahn in 1920 led to changes in the organisation of the *Zentralamt* and distribution of some of its functions; these are now again all centralised in Berlin.

RAILWAYS AND ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

London Bus Fleet Standardisation

A YEAR ago (in our issue of July 31, 1936) we published a table giving details of the bus fleet of the London Passenger Transport Board at the completion of three years of its working life. On its formation, London Transport took over buses and coaches totalling approximately 6,700 from some 140 proprietors, and, although A.E.C. types predominated, there were examples of 34 other makes (apart from type variations) ranging from 295 Leylands and 222 Dennis's to solitary Brockways and Overlands. Most of the old types had been withdrawn by the end of June of last year, and the working fleet of 6,202 licensed buses was shown by our table to have been subjected to a large measure of standardisation. We now publish a similar table giving the composition of the fleet at June 30, 1937, from which it will be seen that the process of standardisation and modernisation has proceeded rapidly during the past twelve months. For example, only 366 of the old NS type buses are left, whereas a year ago there were 1,032 in service. The LS type, which comprised originally 12 vehicles, and latterly 11 experimental, six-wheeled double-deck buses, has now disappeared; and the large number of Gilford vehicles (of which a year ago 53 Country Buses and 87 coaches were still at work) has now been reduced to 1 bus and 14 coaches. A new type appearing in the fleet this year for the first time is the STD, a diesel-engined Leyland Titan built to the board's requirements, of which 93 are now in service. These buses were illustrated, and briefly described, in our issue of May 7. Another noticeable feature is the increase in the proportion of diesel as against petrol-engined buses. Last year 4,664 were running on petrol and 1,538 on heavy oil, whereas at the present time 3,832 have petrol engines and 2,434 are diesels. Although the gradual conversion of virtually the whole fleet to diesel engines will necessarily prove a slow process, it will be seen that the past year has resulted in a substantial alteration in the ratio.

Type Letters	Type of Engine and Chassis		Type of Body (Double-deck or Single-deck) and Approximate Seating		Central Buses	Country Buses	Coaches
NS	A.E.C.	(Petrol)	D/D	50/52	366	—	—
ST	A.E.C. Regent	(Petrol)	D/D	48/54	1,011	126	—
LT	A.E.C. Renown	(Petrol)	D/D	54/60	769	1	—
LT	A.E.C. Renown	(Diesel)	D/D	56/60	455	—	—
LT	A.E.C. Renown	(Petrol)	S/D	32/35	199	2	1
T	A.E.C. Regal	(Petrol)	S/D	26/32	60	39	281
T	A.E.C. Regal	(Diesel)	S/D	30	—	—	53
STL	A.E.C. Regent	(Petrol)	D/D	50/60	572	—	—
STL	A.E.C. Regent	(Diesel)	D/D	48/56	1,344	151	—
STF	A.E.C. Regent	(Diesel)	D/D	56	1	—	—
STD	Leyland Titan	(Diesel)	D/D	55/56	93	—	—
Q	A.E.C.	(Petrol)	D/D	55	—	4	—
Q	A.E.C.	(Petrol)	S/D	37	—	1	—
Q	A.E.C.	(Diesel)	S/D	32/37	52	102	77
R	A.E.C. Reliance	(Petrol)	S/D	26/32	—	39	6
BD	Bedford	(Petrol)	S/D	20	—	19	—
C	Leyland Cub	(Diesel)	S/D	20	23	74	—
C	Leyland Cub	(Petrol)	S/D	20	8	1	—
DA	Dennis Dart	(Petrol)	S/D	17/20	44	—	—
DC	Dennis Mace	(Petrol)	S/D	20/25	—	3	—
DL	Dennis Lance	(Petrol)	D/D	47/53	33	—	—
DT	Dennis Lancet	(Petrol)	S/D	31/32	—	4	5
GF	Gilford	(Petrol)	S/D	29/32	—	1	14
MS	Morris Viceroy	(Petrol)	S/D	20	—	8	2
TC	Leyland Titanic	(Petrol)	D/D	62	3	—	—
TD	Leyland Titan	(Petrol)	D/D	48/56	112	25	—
TD	Leyland Titan	(Diesel)	D/D	50/56	9	—	—
TD	Leyland Titan	(Petrol)	S/D	26/30	—	2	19
TR	Leyland Tiger	(Petrol)	S/D	26/32	—	3	37
	Miscellaneous Types	(Petrol)	S/D	20/32	—	6	6
	TOTALS				5,154	611	501

* Interstation buses.

The composition of the fleet of licensed motorbuses of the London Passenger Transport Board at June 30, 1937

Comfort for Bus Drivers

ALL have now been delivered of the 100 Leyland-built diesel-engined Titans with metal-framed bodies for the London Passenger Transport Board, of which we published a brief illustrated description on May 7. Even a cursory examination of these buses in service reveals that the comfort of the driver has been made the subject of special study in the preparation of the design, and, with the object of giving the driver as much control as possible over the temperature of the cab, there are several unusual features. In order to keep the cab floor cool, a foot-operated ventilator is incorporated in the offside head lamp mounting, which, when opened, allows a current of air to flow in low down all round the head lamp. Incidentally, this ventilator is incorporated with bulb horn mounting and forms the mouth of the horn. In addition to the ventilation provided by the top half of the windscreen being hinged, there is a further ventilator above it, so that in inclement weather the windscreen can be kept closed and air still be obtained through the upper ventilator. On the nearside of the cab there is also a sliding window. The frame of this window also can be opened in the case of emergency, and in such an event the catch can be operated either by the driver from inside the cab, or by an exterior handle. Another interesting feature is a hinged shield located normally against the roof of the cab, but which can be swung down and clipped against the nearside pillar

of the windscreen to prevent the light from the interior of the bus being reflected by the windscreen into the driver's eyes. In order that the driver may have maximum comfort when driving he is provided with an adjustable seat. Another arrangement bearing on the comfort of the driver is the position of the conductor's bell. Instead of being fully exposed in the cab this is placed just behind the driver's ear, actually in the front bulkhead, with a small perforated panel to permit only the volume of sound necessary to attract the driver's attention to reach him.

A Tramway Canard

ON Saturday, July 17, the last Birkenhead tram service ran for the last time, and the event was widely hailed in the daily press as marking the end of " the first street tramway system in Europe." We have no wish to detract from the legitimate claims of this enterprising Merseyside town, but this statement is blatantly false, and, even if the claim to priority be limited geographically to Great Britain, it requires qualification. Passengers have been conveyed by railways or tramroads along the public road from very early years—for example, the Oystermouth (now Swansea & Mumbles) Railway began to do so about 1811—but the first line opened for urban passenger transport was the New York & Harlem Railroad, of which the first section was brought into service in November, 1832. The *Chemin de fer américain* was introduced experimentally into Paris in the latter part of 1853, and by the end of 1856 was a permanent feature of the city transport. Birkenhead can truly claim to have been the first town in Great Britain to accept the street railway proposals of the eccentric American, George Francis Train, whose initial line there was opened with great ceremony on August 30, 1860. Nevertheless, on the opposite side of the Mersey, a horse tram had been placed in service in March, 1859, on one of the rails along the docks, and details of this venture were mentioned in Dr. Whitcombe's recent paper to the Institution of Locomotive Engineers.

Fixed Bus Stopping Places

FOR many years the L.G.O.C. endeavoured to educate its passengers to use specified stopping places, and, as we recalled in our issue of April 10, 1936, posts marking stopping places were erected experimentally (largely as a war-time measure) in 1918. Since then such posts have increased throughout London, but the company's efforts met with only partial success as Metropolitan stage carriages were required by law to stop at any point (with a few safety exceptions, mainly in central London) on being hailed. In the changed circumstances of the Road Traffic Act of 1930, the London Passenger Transport Board arranged that from March 20, 1935, over one section of a route its buses should stop only at indicated compulsory or request stops. The experiment was subsequently extended to other parts of Central London, and generally has proved successful. As the result of this experience, London Transport introduced on Wednesday of last week, July 21, a comprehensive system of fixed stopping places covering the whole of inner London—actually the board's Central Divisional area. Within this area buses are no longer permitted to stop on being hailed, and the 65 miles of streets involved have been fitted with 714 stop signs. Apart from a few unavoidable exceptions, the longest distance the passenger needs to walk to the nearest stopping point is 150 yards. The two types of stop sign that are being employed are respectively those marked " Bus Stop " on a white ground, at which buses will stop whether signalled or not; and " Bus Stop—Request " on a red ground, at which vehicles will stop only on being signalled. In modern traffic conditions the principle of fixed stops in central urban areas has much to commend it not only from the operator's point of view, but also in the interests of passengers themselves, as it removes uncertainty. The complete success of such a scheme, however, depends largely upon its enforcement, and although it would be unfair to make adverse criticism on the strength of experience for but a few days, we have so far noticed very little diminution in the habits of many drivers to ignore being hailed from the pavement, even although such hailing is now confined to the region of a request stop. Furthermore, it is to be hoped that steps will be taken by the appropriate authorities to prevent bus stopping places being used for parking other vehicles.

Producer Gas for Road Transport

PRODUCER gas railcars have been at work for some years on the Continent, principally in the Baltic and East European states, but within the last two years the adoption of this principle for road vehicles has made a decided advance, aided by national movements for home-produced fuels. Such vehicles are beyond the experimental stage, and orders for them are now increasing from one or two vehicles to batches of a dozen or more. For example, 16 Latil producer-gas buses have just been ordered in France, and in Germany the whole municipal fleet of passenger buses in the town of Rostock has been converted to wood-gas fuel. There is a certain sweetness in running of many producer-gas vehicles—both freight and passenger—which should prove an attraction, but the main advantage is simply that of greatly reduced fuel cost. Although as yet there are no fuelling stations selling anthracite, peat, charcoal, or properly distilled coke, this cannot be cited as a disadvantage against the use of producer gas vehicles on long runs, for sufficient fuel can be stowed away easily in the type of paper sack used largely in the retail coke trade. The engines used are standard petrol types, with sundry small modifications to the compression ratio, carburettor, and valve events. There have been very many conversions from petrol to producer-gas propulsion retaining the original chassis, but this rarely enables the new plant to be laid out in a satisfactory manner, and a better all-round performance can be obtained with a chassis specially designed for the purpose.

The Training of Drivers

FOR many years past considerably greater attention has been given to the training of drivers for public service passenger vehicles than to those intended to drive only goods motors. Probably one of the considerations in the past has been that a passenger driver has under his direct care a number of human lives, but few fail to realise at the present time that road accidents cannot be averted by the skill of one driver or class of drivers, and apart altogether from the alterations of the Road and Rail Traffic Act, 1933, large employers have been giving serious consideration to the matter of training their staffs of drivers. The system now in force on the L.M.S.R. may, therefore, be considered as an important contributory effort towards the national problem of safety on the roads. This development, of which we publish details on pages 197 to 199 is the recent institution by the L.M.S.R. of a series of regional training schools situated at various convenient points on the company's system for training the numbers of men who are passed out annually to act as drivers of the company's motor vehicles. A tentative step in this direc-

tion was taken in September, 1935, by Mr. J. Shearman, the company's Road Motor Engineer, when an experimental training school for motor drivers was opened at Lawley Street, Birmingham, and so successful was this venture that the outcome has been the establishment of four regional schools of instruction which it is expected will be able to cope with the whole of the 600 men which the company requires to be trained annually. The syllabus is so designed that drivers shall be " educated " in the full sense of the word, both as to the economical and efficient management of their vehicles, and to the purpose of the Highway Code and Safety First, and the whole carefully thought-out scheme provides a sharp contrast with the familiar haphazard method of " training " men by allowing them to accompany the drivers of vehicles in actual service.

High Wycombe Bus Service Transfers

TRANSFERS of bus services from one railway-associated company to another are comparatively frequent, mainly by reason of the clearly-defined territorial agreements that usually exist between neighbouring companies. At Aylesbury the services of no fewer than four undertakings meet, namely, the London Passenger Transport Board, the Eastern National Omnibus Co. Ltd., the City of Oxford Motor Services Limited, and the Thames Valley Traction Co. Ltd. In the territory south of Aylesbury and west of the London Passenger Transport Area, the activities of the City of Oxford and the Thames Valley concerns are divided nominally by a line running from Aylesbury along the west side of the main road to Princes Risborough; thence by a straight line to the junction of the direct road from Bolter End with the main Wycombe to Stokenchurch road; by a straight line to Ibstone; by a straight line to Watlington, thence along the south-east side of the road from Watlington to Wallingford; along the south side of the road to West Hagbourne via South Moreton; along the south side of the main road to Wantage; along the south-east side of the road to Lambourne; thence by a straight line to Bayden, and a straight line to Swindon. For operating convenience, however, certain City of Oxford routes have run across this strip of country—roughly from west to east—to a terminus at High Wycombe. Opportunity has now been taken to bring the situation more in line with the area agreement, and on July 24 the Thames Valley took over the following City of Oxford services: Ibstone to Stokenchurch and High Wycombe; Watlington to High Wycombe; and Radnage to High Wycombe. City of Oxford buses will continue to run from Oxford to High Wycombe on the through service, and public convenience is being preserved intact by an arrangement for the inter-availability of return and season tickets of both companies over all or part of the road between Lambert Arms and High Wycombe which is common to the various services concerned.

Indian Wedgwood Committee on Road Transport

THE recommendations of Sir Ralph Wedgwood's Committee upon the Indian State-owned railways in respect of road transport co-ordination and competition, though briefly summarised in our issue of July 2 last, may appropriately be expanded in these columns. The first and very important point to note is that the committee is of opinion that no restriction should be placed upon road transport which would unfairly hamper its development. Instead, every effort should be made to co-ordinate it with rail transport, but in view of the fact that road transport regulation and conditions are chaotic at present, and road maintenance and development suffer from lack of funds, the ideal of co-ordination is unattainable until these conditions are improved. Regulation by Provincial Governments should be according to uniform principles laid down by the Government of India. Normally, licences should be issued only in strict accordance with public need, but it is significant that the committee recommends that all passenger and goods vehicles already in service should be licensed forthwith and without regard to the test of public need; if this liberal attitude is adopted much hardship to bus owners and hauliers may be avoided. As well as the usual conditions for vehicle licensing in force in other countries, Sir Ralph Wedgwood and his colleagues urge the necessity for approval and publication of time and fare tables and a statutory provision for fixing lorry rates. Turning to the construction of competitive roads, the committee recommends that decisions should rest with the Central and Provincial Governments jointly in consultation. The railways are urged to consider the advisability of running their own road services —presumably, if and when they can legitimately do so— and of placing their proposals before the Provincial Governments concerned. There should be no objection to these proposals including competitive as well as feeder passenger services, but no competitive goods services are suggested. Non-competitive goods services should, however, be developed and encouraged by all railway administrations.

Trolleybuses in Germany

THE town of Oldenburg, with 75,000 inhabitants, is the largest in Germany which has never had an electric tramway system, chiefly on account of awkward street layout in its central portion. The traffic conditions are also different from those found in other towns in Germany on account of the absence of flats and the use of houses after the English fashion, spreading the population over a larger area and creating a light traffic over comparatively long distances. The length of streets is 450 km. (280 miles) and the area covered by houses more than half that of the residential area of Hanover, and greater than those of Nuremberg or Mannheim. After the war, a service of diesel motorbuses was introduced by a neighbouring tramway undertaking, which later fell into difficulties when the slump came. In 1936 it was decided to instal a trolleybus system, and the Oldenburg Light Railways and Oldenburg-Ostfriesland electricity supply co-operated in this work; the trolley voltage is 550 d.c. supplied through rectifiers. The vehicles were supplied by Daimler-Benz, with electric equipment by Brown-Boveri and the A.E.G. They accommodate 26 persons sitting and 15 standing. Trailers made from old bus bodies and seating 15 passengers are used in rush hours. The service has proved so popular that extensions are being planned, including a circular route round the city outskirts. Insterburg, in East Prussia, has also never had a tramway, though one was proposed shortly before the war. In 1927 four motorbus routes were opened by the city authorities, and in 1935 it was decided to change the 5-mile route from the airport to Sprindt, which carried most of the traffic, to trolley working with similar vehicles to those used in Oldenburg. In the town the overhead wires are carried on span wires attached to rosettes on the buildings. So far there has been no extensive use of trolleybuses in Germany, although that country was a pioneer in the evolution of this type of vehicle, but within the past few years interest has revived. Berlin, for example, opened its first line—between Spandau and Staaken—on December 24, 1933.

Second Annual Reports of the Licensing Authorities

THE second annual reports of the Traffic Area Licensing Authorities, recently published, cover the period from October 1, 1935, to September 30, 1936, the second year of the licensing system of goods vehicles established under the Road and Rail Traffic Act, 1933. During the initial twelve months the licensing authorities were concerned mainly with the establishment of the necessary machinery for licensing and the ancillary tasks associated with it, and bringing the provisions of the Act to the attention of all concerned. These arrangements are now working very smoothly and the authorities have been enabled to give greater attention to the enforcement of those provisions of the Act relative to the maintenance of goods vehicles in a state of mechanical fitness in the interests of public safety. The reports reveal that there are still many carriers whose general standard of business in regard to the maintenance of vehicles, as well as the rates of wages paid, hours of work, and conditions of employment of their staff, leave much to be desired.

Generally speaking, the licensing authorities consider that the standard of maintenance of goods vehicles is higher than it was in the previous year, although it can hardly yet be regarded as satisfactory. The reports of the examiners appointed under Section 17 of the Act show that they examined about 175,000 vehicles during the twelve months and issued no fewer than 21,010 notices of prohibition where the vehicles were, or were likely to become, unfit for service. Of these notices, 6,465 became effective immediately on issue. It has been found generally that the proportion of defective vehicles is higher among vehicles of the lighter type than among heavy goods vehicles. Considerable concern has also been caused the authorities by the persistent overloading of vehicles which are within the 2½ tons unladen weight category. The road fund licensing system of assessing goods vehicles on an unladen weight basis, the higher speed permissible, the ability to use drivers less than 21 years of age, and the fact that heavy goods drivers' licences are not required, doubtless account for the popularity of this type of vehicle in preference to the heavier ones. One authority states that small vehicles of this type frequently carry 6 to 7 tons.

Several of the reports express concern at the very extensive evasion of the law which is still taking place in connection with drivers' records and hours of duty. Certain classes of operators under " C " licences, such as retail distributors, and shopkeepers or owners of businesses where drivers act as roundsmen or salesmen, are among the worst offenders in the matter of causing or permitting excessive hours of driving. A similar practice is also particularly prevalent among long-distance night drivers, and several authorities express the view that evasion of the law in this respect has undoubtedly been greatly encouraged by the fact that the penalties inflicted by magistrates have been very small indeed or merely nominal.

During the period under review, the Goods Vehicles (Licences and Prohibition) Regulations, 1936, came into operation, providing that as from October 1, 1936, identity certificates should be affixed to vehicles authorised under " C " licences. The immediate result was the disclosure that many thousands of sales or substitutions of vehicles specified in " C " licences and many changes in the constitution of licence-holding firms had been effected without proper notification to the licensing authority or application to amend the licences. In connection with the evidence produced in support of applications for licences, it has been brought to light that certain firms requiring transport are very willing to supply applicants for licences with letters for production stating that they are willing to give work to them if they are successful in obtaining a licence. So many letters do some firms give out that one authority has a strong suspicion that they are really desirous of getting as many vehicles on the roads as possible in order to increase competition and further reduce rates.

The only voluntary movement within the inland transport industry towards the co-ordination of the services offered by its two largest members—the road haulage operators and the railway companies—is that revealed in a few instances where the railway companies have secured financial interest in certain haulage concerns. In this connection one authority remarks that it may be regarded as surprising that after two years' experience of the working of the Act, there has not yet emerged a scheme whereby small operators have endeavoured to amalgamate their capital and resources by forming themselves into limited liability companies. As the result of the protection which the Act affords and the co-ordination which its administration is gradually effecting, rates for the carriage of certain classes of merchandise have shown an upward trend. Indeed, a study of the reports indicates that the Act has proved to be to the benefit of those carriers whose businesses are well organised and properly controlled and run on business lines, and who charge proper rates which enable them to keep their vehicles in good condition, pay their employees proper wages, and offer them good conditions of employment.

Publications Received

The Motor Transport Year Book and Directory. Edited by Frederick C. Garrett. London: The Electrical Press Limited, 13-16, Fisher Street, Southampton Row, London, W.C.1. 8½ in. by 5 in. by 2½ in. 948 pages. Price 30s. net.—Ever since this valuable reference work was first produced it has occupied an unique position as the only complete source of information regarding operators and manufacturers of commercial motor transport vehicles. The present edition is the 21st annual volume, and still retains the familiar form that has made it an indispensable reference work on the shelves of all concerned with road transport. The contents, however, have been exhaustively revised so as to make the book as complete and up to date as possible. Although it is adequately indexed most users presumably rely on the fact that the entries are arranged in alphabetical order, and in past years have experienced some difficulty as the result of limited companies with titles beginning with an initial being included under the alphabetical position of that initial, and not of the main word (*e.g.*, W. Alexander & Sons Limited appeared under " W "). The preface now points out, however, that in the case of joint stock companies with registered titles beginning with an initial or fore-name, the company has been inserted under the appropriate position of the surname.

The principal contents of the volume consist of over 10,000 road transport, aircraft, and allied undertakings; and a directory giving the names and addresses of over 5,150 directors and officials engaged in the various businesses. In addition, there are valuable sections which survey the progress of the past year and outline the law relating to road motor services. Figures given in the statistical section show that, despite the movement towards amalgamation that has characterised the last few years the reduction in the total number of motor transport undertakings recorded is comparatively slight, and the grand total of 8,411 motor transport undertakings (comprising 2,460 companies, 5,808 private firms, and 143 municipalities) is only about 350 fewer than in the peak year 1932-33. The municipal transport figure at 143, however, compares with 177 in the volume for 1930-31.

Intensive L.M.S.R. Training of Motor Drivers

Following the establishment of an experimental training school at Birmingham two years ago, the L.M.S.R. has now founded a permanent series of four regional schools of instruction able to cope annually with the training of a total of 600 men

WITH a fleet of approximately 3,500 road motor vehicles (and more than 2,100 trailers) operating throughout the length and breadth of its system, the L.M.S.R. is one of the largest commercial motor owners in the country and also, of course, one of the largest employers of driving, maintenance, and service staff. The organisation of the company's Road Motor Engineer's Department formed the subject of a comprehensive series of articles beginning in our Road Transport Section for December 18 last, but the subject of staff training was not then dealt with.

With the exception of a limited number of vehicles used for departmental service purposes, the whole of the L.M.S.R. road motor fleet is employed in the collection and delivery of goods and/or parcels traffic under the control of the Chief Operating Manager, Mr. C. R. Byrom, who is responsible for the driving staff (approximately 5,000) while they are engaged in this work. The training and passing out of the drivers prior to their taking up driving duties is, however, the responsibility of the company's Road Motor Engineer, Mr. J. Shearman, M.I.Mech.E., M.I.A.E., under whose direction has now been evolved a comprehensive scheme for the training of the 600 new drivers who are required annually for such positions. These drivers are recruited from the company's existing staff and not from outside the organisation.

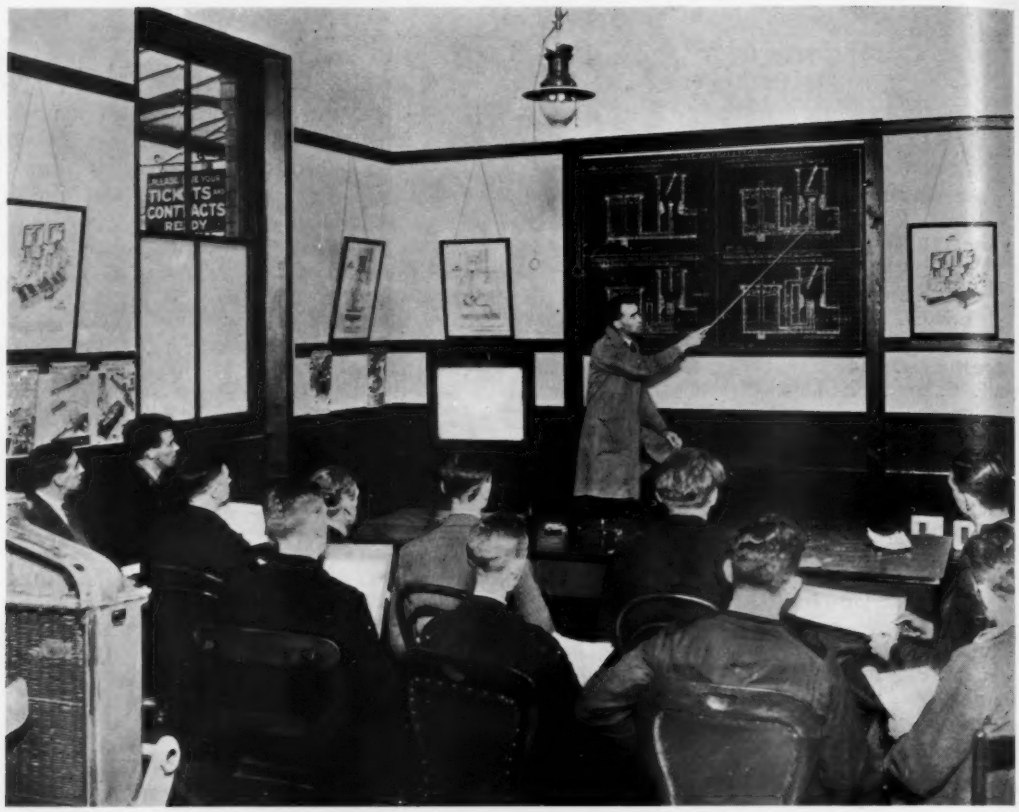
As explained in detail in the series of articles referred to above, the L.M.S.R. road fleet is very varied in its composition, and the numerous types range from small parcel vans of 7 cwt. capacity to very large machinery carriers of 25 tons capacity. There is also a number of special type motors, in the management of which drivers must be carefully instructed, apart from their ordinary driving tuition. In addition to the ordinary non-vocational driving licence, L.M.S.R. motor drivers must be in possession of vocational licences for any of the following classes of heavy goods vehicles which they may be required to drive:—

Heavy and light locomotives.
Motor tractors and heavy motorcars (electrically propelled).
Motor tractors and heavy motorcars (steam propelled).
Motor tractors and heavy motorcars (other than electrical or steam).
Articulated vehicles.

The company insists that every driver, before being permitted to take up driving duty, must pass a rigorous theoretical-cum-practical examination prescribed by the company. While the L.M.S.R. for a number of years had its appointed driving inspectors in various parts of the system, it was found with the development of road motor operation as applied to railway requirements, and with the increase of traffic on the roads and the subsequent more stringent licensing regulations, that a more intensive and more satisfactory system was required than that of training men by allowing them to accompany the driver of a vehicle in actual service. It was also desired that drivers should be trained not only up to a standard sufficient to pass the statutory examination for certificates and licences but also should be "educated" in the full sense of the word, both as to the economical and efficient management of their vehicles and to the principles of the Highway Code and Safety First.

A tentative step in this direction was taken by the Road Motor Engineer, in September, 1935, with the opening

A class at Sutton Park school examining the sectional chassis



Theoretical instruction at the blackboard

Explaining road problems at the model table

L.M.S.R. SCHOOL FOR MOTOR DRIVERS AT SUTTON PARK

of an experimental training school for motor drivers at Lawley Street, Birmingham. An existing unoccupied building there was transformed into a schoolroom and provided with the necessary practical equipment. Within ten months of this experimental school being brought into operation a total of 89 drivers from the Birmingham, Wolverhampton, Bristol, Swansea, Stoke-on-Trent, Leicester, Northampton, and Derby districts, had been successfully passed through it, and experience indicated clearly that these school-trained men were considerably more efficient and in every way more satisfactory than those trained under the old system by another driver on a vehicle in actual service. Moreover it was evident that under the training school system the time required for a man of average skill and intelligence to pass the examinations and secure his licences and certificates was much shorter than under the then-existing method. It was therefore decided, following this successful experiment, to apply the training school system to all new candidates for positions as L.M.S.R. motor drivers.

The outcome has been the establishment of four regional schools of instruction, and it is expected that these schools will be able to cope with the whole of the 600 men who are required to be trained annually. The schools are disposed as follow:—

Watford, covering the London and Northampton Districts.

Sutton Park (near Birmingham) covering the Central or Midlands area.

Oldham (Clegg Street) covering the North-Western area.

Cleckheaton (Yorks) covering the Northern, North-Eastern and North Wales areas.

The Sutton Park School replaces the original experimental school at Lawley Street, Birmingham, and is better suited to requirements.

Typical interior equipment of a schoolroom comprises: a complete chassis, sectioned to display the various working parts and their points of access; a full range of engine and vehicle components, displayed individually on a bench for detailed examination and explanation; a display of road signs and warnings, and safety first posters; and a table arranged as a model " highway " with traffic lights, crossings, corners, and model vehicles to illustrate principles of safe driving, the rule of the road, and so forth.

In order to help candidates as much as possible, an intensive syllabus manual has been prepared by the Road Motor Engineer's staff covering: the component parts of a motor vehicle (how they work, what they do, and why); motor driving (controls and their operations), and the Highway Code and road sense. This syllabus is framed and worded so as to explain technical matters in as simple and understandable a manner as possible, the object being to inculcate in every L.M.S.R. road motor driver a high standard of knowledge of the working parts, and a keen sense of responsibility towards the vehicle which the driver has under his care, and towards other users of the highway upon which he drives.

Adjacent to the schoolroom in every case is an open space with a stretch of private road adjoining, used as a training ground, where, after they have completed their theoretical training, students are given practical driving lessons under the guidance of the instructor and are afterwards themselves allowed to drive. A short period of riding with the driver of a vehicle in service on the highway then precedes the examination, but, although this aspect of training is still necessary in order to impart confidence under traffic conditions, its duration is very much shorter than was the case when the full period was spent in this way. On an average the training of a driver at these schools takes twelve days, compared with eighteen days under the old method.

After passing through the schools the candidates now come before the company's inspectors, who are approved by the Ministry of Transport and Licensing Authorities for testing candidates and issuing official certificates when the candidates have successfully passed their tests. The certificates which are issued by the company's inspectors on behalf of the Ministry of Transport and Licensing Authorities in accordance with the Road Traffic Act requirements are: a certificate of passing driving test for the ordinary driving licence; and a report of test of drivers for heavy goods vehicles—the driver must pass a separate test for every class for which he requires a heavy goods licence. In addition to the above, the company requires that its drivers must be passed for every different make of vehicle which they have to drive, even if they have the appropriate official licence for that particular class of machine, and a certificate is issued by the inspector in respect of each successful test.

Our Confiding Police?

The average driver on seeing this road sign might be tempted to think that at last the sting was to be taken out of the police trap by a timely warning. Our contemporary " The Field," to whom we are indebted for the illustration, rapidly disillusioned its readers, however, by explaining that Trap is a village in the Malay States, and that the sign is nothing more exciting than the notification of a speed limit through the " built-up area " of that village

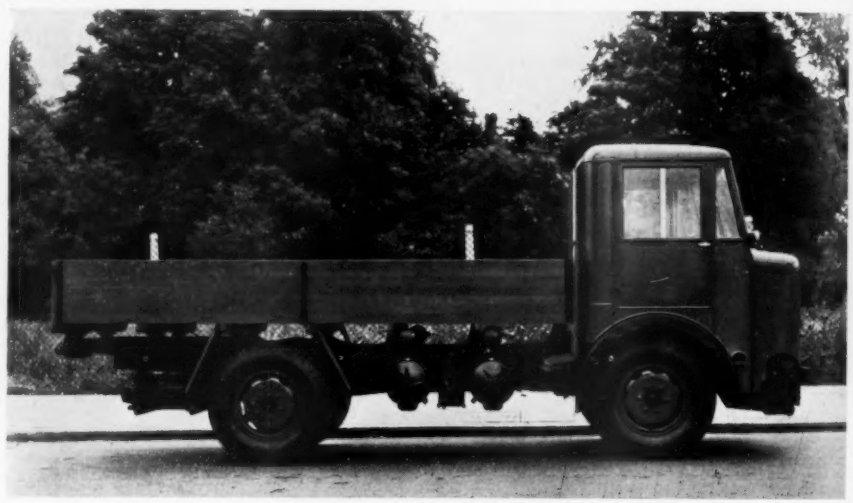
Producer Gas Vehicles in Britain

Tax-free fuel and simplicity of construction form notable features

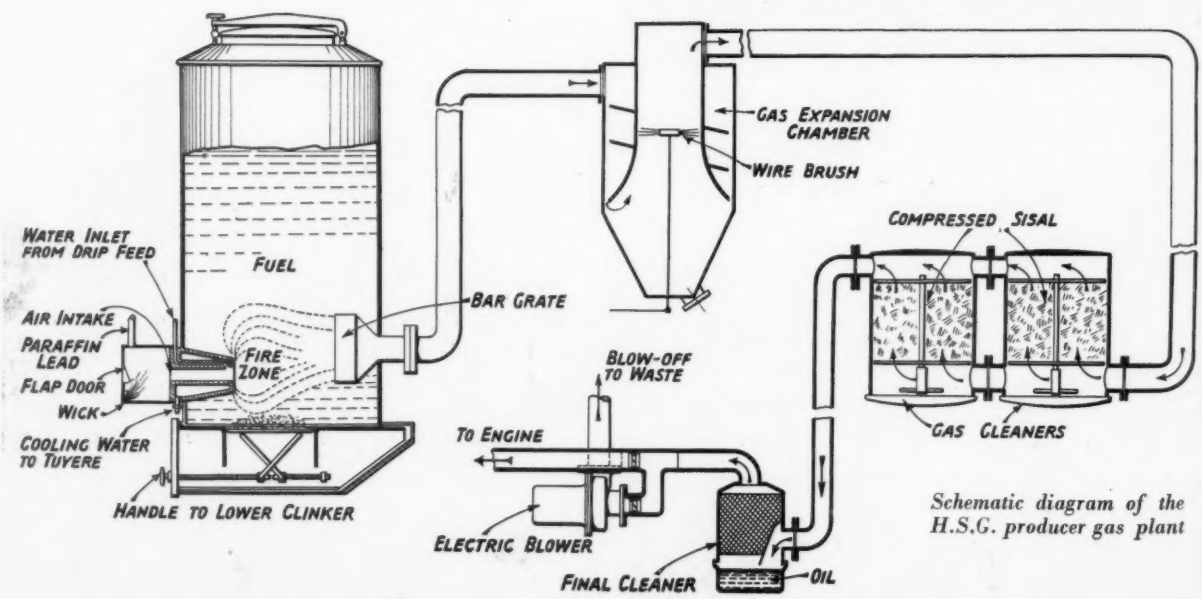
THERE has been an impetus given in the last year or so to the construction of rail and road vehicles driven by producer gas by the "home-grown fuel" movements in various countries. Numbers of such lorries and tractors are at work in Britain, among them the productions of High Speed Gas (Great Britain) Limited, of Park Royal, which embody a new principle in gas production giving an exceedingly compact and efficient layout.

In contradistinction to the normal type of producer, in which air is admitted through a grate and passes comparatively slowly through a large bank of fuel, the H.S.G. generator is characterised by extremely rapid combustion, without the use of a grate. At the side of the welded steel tubular producer shell is a water-cooled tuyere, or cylindrical conduit, with a venturi-shaped lead into the fuel bed, and this forms the only air entry. During normal working the air is drawn in from outside by the suction of the engine pistons, but the shape and proportions of the tuyere give the air an extremely high velocity at all rates of working. At starting, an electrically-driven blower is used to provide the initial draught, and a few strands of wick are lighted at the entrance to the producer air intake. Combustion takes place almost immediately, and generally the engine can be turned over to gas within a couple of minutes.

The second of the two principal features of the H.S.G. producer is the way in which the hot zone is limited, and kept away from the walls, so that no refractory lining is necessary. A small water stream is introduced into the tuyere as shown on the accompanying diagram. This water is caught by the air, broken up, and hurled in minute particles into the hottest part of the fire. The



An H.S.G. lorry with a 55 h.p. engine. The gas producer is scarcely 2 ft. in diameter and is located in the corner of the front bonnet; the end of the tuyere and the clinker pan can be seen in the illustration. Up the back of the cab is carried the exhaust, or blow-off, pipe from the starting blower. The two horizontal cylinders below the body are the gas cleaners



Schematic diagram of the H.S.G. producer gas plant

violent explosion of these particles tends to make them recoil back round the inlet side and the whole fire becomes of tulip shape. Any excess of liquid falls to the bottom of the producer, whence it may rise again as vapour, encircling the fire from below; any undecomposed vapour entrained in the general movement towards the outflow—opposite the tuyere—takes part in the heat-absorbing reaction between carbon and water in an outer and cooler zone of the fire, and if the water introduced at the tuyere is greatly in excess of that required for the gas-making, it moves upward and outward from this last zone and forms a water envelope in the form of a shroud of vapour which gives up its heat to the fuel and producer shell very slowly. There is always an excess of water in the producer, but there need be no excess in the outflow.

A further advantage of the concentration of the fire is that the ash and clinker are deposited in one place only. At this point is a tray which can be raised or lowered, and in service it is lowered about every 50 miles or so by the driver's giving a turn to the operating handle; this brings the slag level with the bottom of the producer. At the end of the day's run the whole tray can be cleared out. From the producer the gas is led through a pipe to a gas expansion chamber, then through cleaners filled with sisal, and finally through an oil-type cleaner before passing to the engine. The engines used are normal petrol types with an increased compression ratio and other slight modifications, but retaining the carburettor and magneto. They are started on petrol or paraffin.

At the moment, the two most successful fuels are charcoal and anthracite, but it is possible also to burn low or high temperature cokes, and British Coal Distillation Limited is giving great attention to the production of a thoroughly suitable low temperature coke from Leicestershire bituminous coal. Under normal conditions the producer of a 4-ton lorry burning anthracite needs recharging every 50 to 55 miles. The water supply will, as a rule, last a full working day.

Various lorries and passenger vehicles with H.S.G. plants are in service, and they are notable for the smooth and silent running of the engine and for its pulling power at low rotational speeds. In order to ensure that its plants have the right performance characteristics, and to give the most convenient and efficacious layout of the equipment, High Speed Gas (Great Britain) Limited does not make conversions from existing petrol vehicles, although, of course, standard petrol engines, notably the A.E.C. type, are incorporated. As may be seen from the accompanying illustration, the layout of the producer, engine, radiators (at the front), and the gas cleaners (between the wheels), has been carried out neatly and with every facility for easy inspection.

Overseas Notes

Competition in the Egyptian Delta

As indicated by Sir Montagu Sharpe at the recent Egyptian Delta Light Railways meeting, the steps taken by the directors to increase the volume of passenger travel have been satisfactory as to numbers, since the total carried during the year ended March 31 last reached the record of over 12½ millions. Receipts, however, showed a decline, mainly due to the necessity of continuing to reduce fares on certain sections in order to meet road competition. The motorcar regulations are still not being efficiently enforced by the local authorities, and overloading of passengers in taxi-cabs continues. There is also an increasing tendency for foreign traffic to be diverted to motorbuses and taxis, but railway short distance and suburban traffic is being greatly developed by cheap fares and increased services with satisfactory results. On the motorbus services inaugurated by the railway company in June, 1935, nearly 3,000,000 passengers were carried during the year under review at a profit of £6,581. An agreement has now been reached with competing motorbus proprietors, under which bus services are being amalgamated and two Egyptian companies are being formed to work them. Applications will be made through these companies to the Egyptian Government for concessions to run motorbuses on all roads alongside the Egyptian Delta railways. The goods traffic position is more difficult, as the lorries on the roads are now of greater carrying capacity, and many of the ginning factories are now starting to operate their own lorries.

Road Transport in Ethiopia

The Italian Government is at present devoting close attention to the question of transport in Ethiopia, and according to the latest programme, a total length of 4,583 km. (2,841 miles) of new roads is to be constructed; contracts for 3,438 km. (2,132 miles) have already been let. These roads are to be approximately 30 ft. in width, of which the middle 22 ft. are to be tarred. According to the most recent census, there are now about 6,000 lorries in commission and belonging to private firms in Eritrea, Somaliland, Galla-Sidamo, Amhara, and Addis Ababa.

An important decision has been arrived at in connection with the necessity for standardising the types of lorry, repair facilities, supplies of spare parts and accessories, namely that only vehicles of Italian manufacture are to be used. Also, only two types—one of small and the other of large capacity—are to be sent to those areas, both of them having diesel engines. Road-train services are, moreover, to be established, each train to consist of three or four heavy trailers hauled by a 360/420 h.p. diesel tractor.

For passenger services, ten of which are already running, or shortly will be, Italian-built diesel buses are in use or to be used.

Trolleybuses with Auxiliary Diesel Engines

The Rome Tramways Corporation has ordered from the Fiat works a set of trolleybuses fitted with diesel auxiliary engines, to enable them to run on sections of road where there is no overhead transmission line.

An attractive Karrier Cob Junior tractor, which is one of 53 recently delivered to the Great Western Railway for use in conjunction with quickly detachable 3-ton trailers. A special fitting in the form of a bumper bar and domed rear wings are features of these machines

New A.E.C. Service Station at Southall

This modern depot can handle 40 vehicles at one time

ON July 13 the new Southall service station of the Associated Equipment Co. Ltd. was officially opened by Mr. Norman A. Hardie, General Manager (Sales) of the company. The station stands in the spacious grounds adjoining the A.E.C. factory, thus providing the ample layout and room for expansion, the need for which dictated the move from the company's depot in North Road, Caledonian Road, London, N.7. Minor repair work, and particularly the despatch of spare parts by rail from the London termini, will continue to be dealt with at North Road, but all major repairs will be entrusted to the new depot, where the accommodation enables 40 vehicles to be handled at one time.

General view of the new A.E.C. service depot at Southall. The four doors have a clearance height of 16 ft. so that any type of vehicle may enter and leave without difficulty

In addition to its proximity to the Southall factory, the site of the new depot has a second advantage inasmuch as it will eventually face an important new highway planned to link the North Circular ring road and the Great West road. At present the premises are set back only a few feet from Windmill Lane; but even this road is quickly attained from either of the by-passes mentioned above. An area of some 35,000 sq. ft. is covered by the building, and over 100 tons of steel have been absorbed by the roof girders and stanchions. All five of the main doorways are steel shuttered, and have a standard clearance height of 16 ft., so that all classes of vehicles can enter and leave without difficulty. The doorway at the west end gives access on to a concrete "float," with an area of 7,200 sq. ft., where there is equipment for washing down and for the easy handling of test loads.

Special consideration has been devoted to the problem of interior light, and two of our illustrations show how the reduction of brickwork, the provision of deep, wide windows, and the adoption of a glass filled roof provide the best possible working conditions for the staff. A spacious bay has been provided for the reception of vehicles, and here the kit is removed and all details are recorded of the work to be executed. Adjoining this bay are the superintendent's and general offices, a drivers' rest room, and a "spares" waiting room provided with a telephone so that those in charge of vehicles may, if necessary, communicate with their employers. Nearby are a fuel pump test room and the stores, the latter occupying one-fifth of the total area of the building. All small components are stocked in steel bins, and the passage ways between these are strongly illuminated by low-hung lamps, so that at night identification of any part may be readily made.

Compressed air is used extensively as driving power for overhead cranes, drilling, riveting, and similar machines. This medium has, indeed, largely replaced electricity, which, apart from lighting, is used to drive only certain self-operated machines. The air-compressor plant, consisting of an Ingersoll Rand compressor, driven by a 50-h.p. electric motor, operates automatically in response to the demands made upon it.

The six pits with which the depot is provided are lined with glazed bricks; they are provided with compressed air points, and illuminated at night by recessed dioprism lights, with independent switches for every pit. An end communication pit links all the vehicle pits, and is fitted with work benches so that the men can carry out all their tasks at one level. Ample width is allowed for work and movement. The windows adjacent to the pits are carried down almost to ground level, so that adequate light is provided during the day. An underground exhaust system guarantees constant purity of air when engines are running.

The pits are grouped together in one section of the depot, in such a way as to cause no obstruction to the movement of vehicles being prepared for overhaul. At the same end of the building are grouped the air-compressor, the 60-kW. generator set that supplies all the electrical requirements of the depot, the boiler for heating in winter, and a 10-ton storage tank for fuel oil.

With regard to the heating boiler, this supplies a low-pressure system feeding unit heaters suspended from the roof girders. The installation operates entirely automatically, making use of an ingenious system of thermostatic and electrical controls.

The bays for unit repair and overhaul work are grouped

The repair pits, lined with glazed bricks and provided with compressed-air points and recessed lights

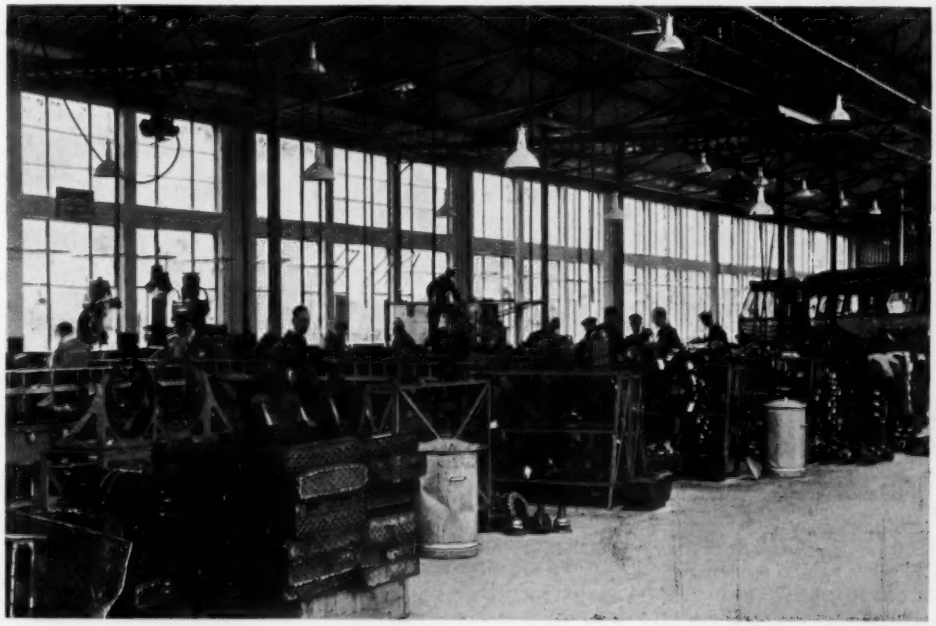
Travelling stands on the engine assembly track; they can be rotated into any desired position

together, and line a short engine assembly track provided with six travelling stands. A feature of these stands is that they can be rotated into any desired position thus greatly facilitating the work of the fitters, of whom at least two can always be employed on any one unit. Conveniently grouped on the opposite side of the track are the machine tools, including radial drills, grinders, lathes, &c., and at its extremity are two running-in stands adjustable for any types of engine. There are also special fixtures for gearboxes, differentials and radiators, all designed to speed up the work of dismantling and assembly as much as possible.

The machine tool and testing equipment of the depot is particularly up to date. Among the machine tools is an electrically-driven boring bar for main bearings. A mobile electrical test plant is provided for carrying out immediate and comprehensive tests on vehicles brought in for repairs, as well as test apparatus of a fixed type for electrical components, brake exhausters and servos.

Special attention has been paid to facilities for the convenience of the staff, and the importance of hygienic washing facilities is recognised by the provision, for the repair and overhaul staff, of two circular wash fountains. These are brought into operation by a foot operated ring encircling the base of each fountain, and enable at least 24 men to wash at the same time. Roof racks adjacent to the fountains keep the men's coats out of the way during working hours, and assist in quickly drying any wet garments.

The organisation of the depot provides for a 24-hr. service. Neon advertising facing north and south draws attention to its facilities.

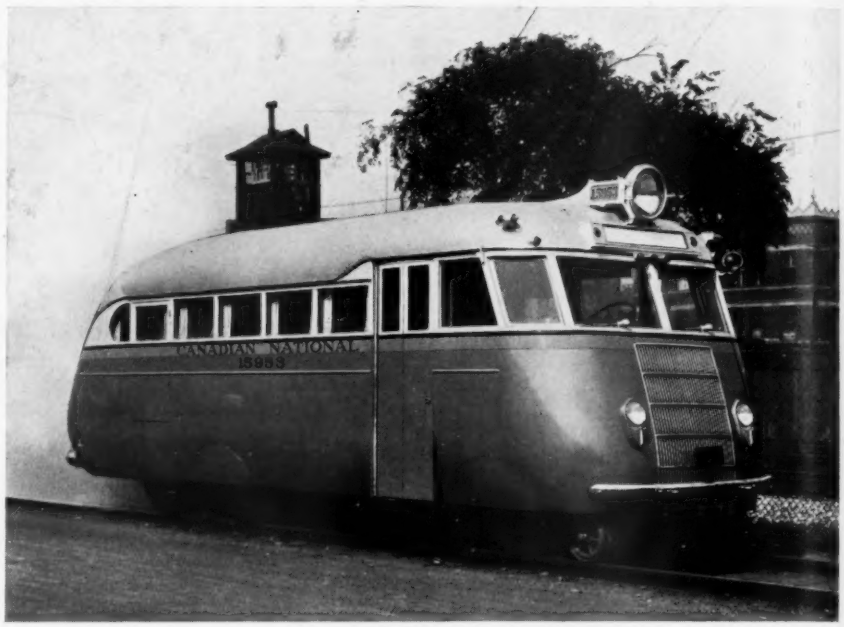


The excellent lighting of the almost unbroken wall of windows on the south side is seen in this view of the repair bays

Road-Rail Vehicles in Canada

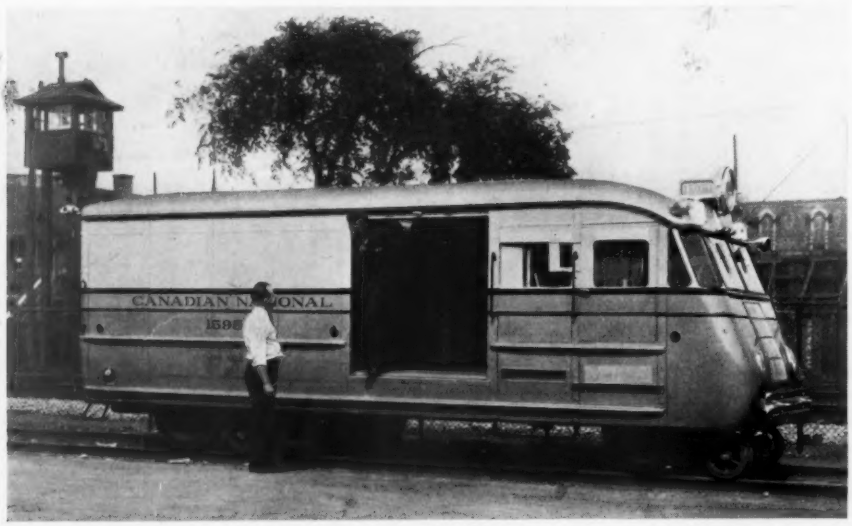
Both passenger and freight types are being introduced experimentally by the Canadian National Railways on branch line service

SEVERAL experimental vehicles designed to run with equal ease on road or railway have made their appearance in various countries, but in the main have not so far proved outstandingly successful from the traffic viewpoint. In North America the auto-railer, as the type of vehicle is termed, has been operated by several railway companies in the United States, and now the Canadian National Railways are experimenting with such units. It was announced in May last that three passenger auto-railers had been ordered by the Canadian National Railways for branch line service on the Atlantic, central, and western regions, and that one auto-railer freight car would be put in service in the west. Examples of both types were first exhibited on July 12 in Montreal and the passenger vehicle made a trial run from the City Hall to Lachine by road and returned to Bonaventure station by rail.



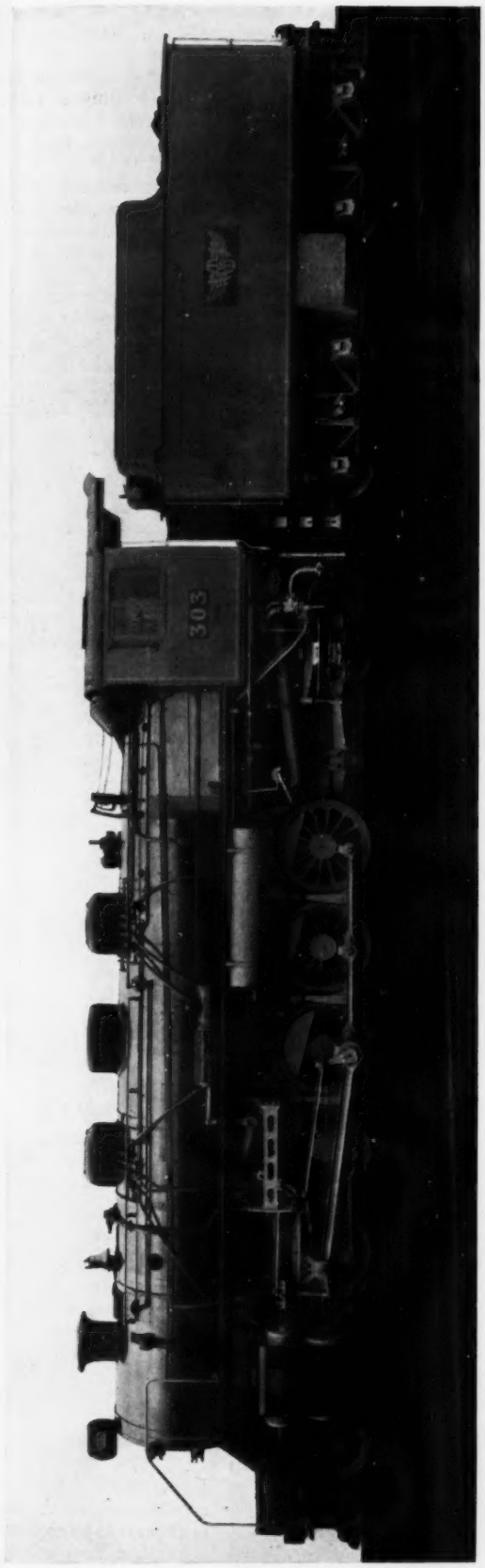
A 25-seat auto-railer on exhibition at Montreal

The passenger type has a capacity of 25 persons, and a load of 5 tons on rail and 2½ tons on road can be carried by the freight type. Both are 25 ft. 6 in. long and 8 ft. wide, and are equipped with 105 h.p. engines giving a speed of 80 m.p.h. The transmission provides five forward speeds and reverse, The change from road to rail is accomplished by the driver by means of a mechanism controlled from his seat which lowers four flanged guide wheels that ride on the rails and simultaneously locks the steering gear automatically. The motive power is transmitted to both road and rail through the four rubber-tyred wheels at the rear of the vehicle. As the vehicles ride on both the flanged and the rubber-tyred wheels when on the railway, there is very little risk of a puncture resulting in derailment. The cars have hydraulic brakes on all six wheels and emergency on four. These auto-railers were manufactured by Evans Products, Inc., of Detroit, Michigan, which was responsible for the construction of similar vehicles that ran for 18 months on an electric railway between Fairfax, Virginia, and Washington, D.C.



The freight variety of auto-railer, with a carrying capacity of 5 tons on rail and 2½ tons on the road

In referring to the purchase of this equipment, Mr. S. J. Hungerford, Chairman and President of the Canadian National Railways, emphasised that the move was experimental, and was intended to permit of tests being made on various sections of the system as to the adaptability of these cars for use in Canada.



New 2-10-2 fast goods locomotive, Tientsin-Pukow Railway

NEW 2-10-2 TYPE LOCOMOTIVE, TIENTSIN-PUKOW RAILWAY

Introduced for dealing with 2,000-ton freight trains at high speeds

THE locomotive illustrated herewith has been designed and built by Fried. Krupp A.G., of Essen, for the Tientsin-Pukow Railway, and is the first of its type in China. It is intended for fast and heavy goods traffic, and the design meets the specification of the railway for a locomotive capable of hauling trains weighing up to 2,000 tons at a speed of about 50 km.p.h. (31 m.p.h.), and to be able to negotiate curves of 180 m. (591 ft.) radius. The following are the leading particulars:—

Cylinders, dia.	560 mm. (22 in.)
Piston stroke	711 mm. (28 in.)
Wheels, coupled, dia.	1,372 mm. (4 ft. 6 in.)
Wheelbase, rigid	4,350 mm. (14 ft. 3¼ in.)
,, total	11,300 mm. (37 ft. 1 in.)
Boiler, heating surface :	
Tubes and firebox	216·5 sq. m. (2,330·4 sq. ft.)
Superheater	70 sq. m. (747·1 sq. ft.)
Combined heating surface ..	286·5 sq. m. (3,078·5 sq. ft.)
Grate area	5 sq. m. (54 sq. ft.)
Boiler pressure	14 atm. (199 lb. per sq. in.)
Tender :	
Tank capacity	25 cu. m. (5,563 gal.)
Coal capacity	10 *tonnes* (9 t. 17 cwt. 5 lb.)
Wheelbase, total	5,400 mm. (17 ft. 8⅝ in.)

The boiler barrel, 1,700 mm. (5 ft. 7 in.) in diameter, lagged with Alfol and covered with planished steel sheets, is built up of three sections and the firebox is of the "non-ageing" Krupp-Izett steel specially developed for the purpose. A combustion chamber is incorporated with the firebox and the sides and bottom of this are connected to the firebox casing by means of flexible stays, the same form of staybolt also being fitted at the sides of the firebox at the breaking zones. The firebox contains four water tubes of 76 mm. (3 in.) external diameter. The boiler tubes are of 51 mm. (2 in.) and 137 mm. (5·4 in.) external diameter, and the latter house a Schmidt superheater provided with a multiple valve throttle of American type in the smokebox.

The grate is designed to burn coal with a calorific value of 7,450 kilogramme-calories (29,576·5 B.Th. U.). It slopes downwards towards the front and is provided with combined hand and steam operated rocking firebars, while a drop grate is arranged at the rear. There is a mechanical stoker of the Standard Stoker Company's BK 1 type, with the engine on the locomotive.

The blastpipe, of ample diameter, is designed to minimise back pressure. There is spark arrester of wire netting conforming to American practice in the smokebox, from which soot can be removed through a chute. The smokebox front plate has a small opening in the centre carried on Okadee hinges.

The frames are of the bar type, rolled each in one plate of 100 mm. (4 in.) thickness and machined to close limits, so as to ensure a considerable measure of interchangeability for the parts attached to them. The bearing springs of all axles are arranged on the overhung system. Those of the leading carrying axle and the three following coupled axles are connected by compensating beams, as are also the two remaining coupled axles and the trailing carrying axle, thus forming two separate groups. A Krauss-Helmholtz bogie, combining the leading coupled axle and that of the front carrying wheels, allows a lateral movement of 115 mm. (4·5 in.) for the latter, 20 mm. (0·8 in.) for the former. The trailing axle has a side play both ways of

80 mm. (3·15 in.), and the wheels of the third and fourth coupled axles have flanges reduced in thickness by 15 mm. (0·6 in.). All axleboxes are equipped with bronze bearings lined with white metal and are fitted for oil lubrication. The wheel bosses have large thrust plates. Whereas the coupling rods have simple closed bushes, the connecting rod ends are fitted with floating bushes. The front coupling rod has a spherical bush to allow for the side play of the first coupled axle, the crank pin being cylindrical. All connecting and coupling rod bearings are grease-lubricated.

The piston valves, 305 mm. (12 in.) diameter, are designed for inside admission. Each cylinder has a steam-operated by-pass valve, and, in order to avoid the formation of a vacuum in the cylinders when coasting, the regulator handle can be placed in such a position that only very little steam is admitted. The piston-rod stuffing box is of the United States metallic packing type.

The valve motion is of the Walschaert-Heusinger pattern, controlled by Alco power reversing gear, and all reversing gear bearings are provided with lubricating nipples. The parts in contact with steam are lubricated by means of a sight feed lubricator of the hydrostatic type, placed in the cab. Of its five outlets, four are used for the pistons and piston valves, and the fifth for the steam cylinder of the air pump. A Graham White sanding device operated by compressed air is fitted so as to deliver sand in front as well as at the rear of the coupled wheel. Westinghouse ET 6 pattern brake, operating on the straight air principle, is fitted, the compressed air being supplied by an 8½-in. cross compound air pump.

The locomotive has electric lighting equipment consisting of a Pyle National turbo-generator feeding a 14-in. diameter headlight and the customary lamps. The couplers are of the automatic type, and a bell operated by compressed air and by hand is also provided.

The weight of the engine in working order is 101·6 *tonnes* (100 tons), and the tender 59·5 *tonnes* (58·6 tons), making a total of 161·1 *tonnes* (158·6 tons). The adhesive weight is 76·3 *tonnes* (75 tons), and the tractive effort 19,300 kg. (42,548 lb.).

The 8-wheeled tender is equipped with Symington axleboxes and two diamond-type bogies having double springs arranged between the axles. The connection between the tender and the engine is made by drawbars and a Franklin radial buffer. The automatic coupler at the rear end of the tender is provided with drawgear of the Bradford rocker type.

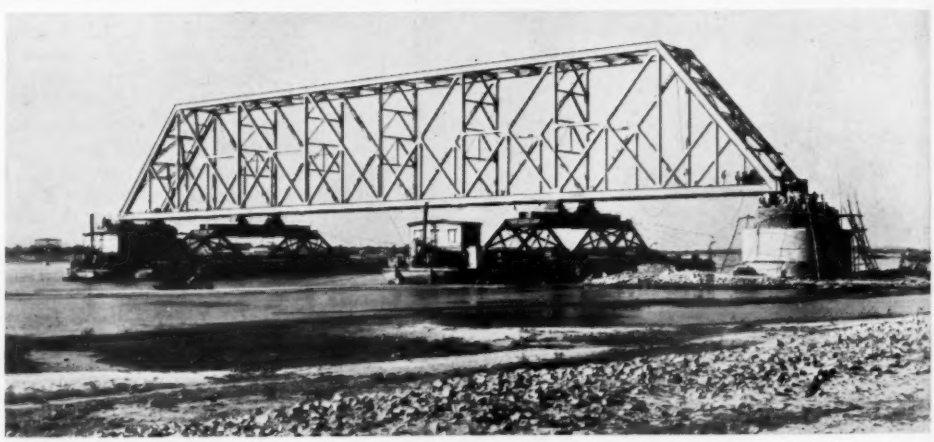
The boiler fittings supplied are as follow:—

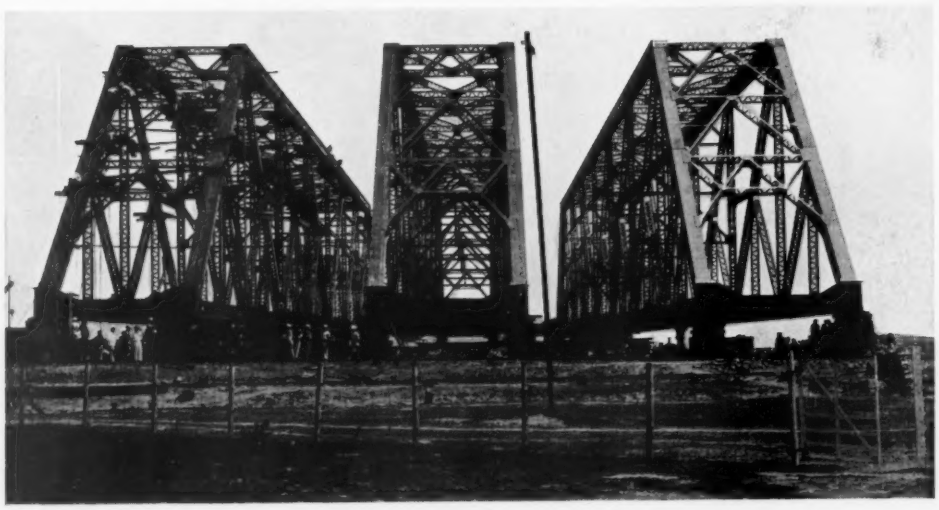
2 Hancock injectors.
2 Coale pop safety valves.
2 Hancock boiler feed valves.
1 Ashcroft coal drench cock.
2 Hancock glass gauges
1 Ashcroft cut-off gauge.
1 Clyde soot blower.

Steam heating equipment supplied by the Gold Car Heating & Lighting Company.

Meghna Bridge at Bhairab Bazar, Assam-Bengal Railway

(*See overseas paragraph on page* 190)





Above: One of the 331-ft. main spans being lowered on to the piers after being floated out on special staging flats or barges

Left: Three of the main spans erected on the river bank prior to being floated out to site

RAILWAY NEWS SECTION

PERSONAL

Southern Railway Appointments

The following appointments, to date from October 15, 1937, have been approved by the board of directors of the Southern Railway:—

Mr. J. B. Elliot, Assistant Traffic Manager, to be Assistant General Manager in succession to Mr. G. S. Szlumper, who as already announced in our issue of June 4, will succeed Sir Herbert Walker as General Manager.

Mr. R. M. T. Richards, Development Officer, to be Assistant Traffic Manager in succession to Mr. J. B. Elliot.

Mr. E. F. E. Livesey, Deputy Continental Assistant, to be Development Officer in succession to Mr. R. M. T. Richards.

The Honourable Walter Leslie Runciman, of Birney Wood, Throckley, Northumberland, has been appointed a Director of the London & North Eastern Railway in succession to Mr. Clarence Dalrymple Smith, resigned.

Indian Staff Changes

Mr. N. W. Synnott has been appointed to officiate as Deputy Chief Commercial Manager, E.I.R., as from April 28.

Mr. C. E. Hall has been appointed to officiate as Deputy Chief Accounts Officer, G.I.P.R., as from April 18.

Mr. S. E. L. West, O.B.E., on return from leave, has been appointed to officiate as Divisional Superintendent, Lahore, N.W.R.

Mr. E. R. Seshu Iyer has been appointed to officiate as Chief Accounts Officer, E.B.R., as from April 23.

Mr. P. G. Shah has been appointed to officiate as Chief Accounts Officer, G.I.P.R., as from April 18.

Mr. R. W. Taylor has been appointed to officiate as Chief Engineer, E.B.R. as from May 5, and Mr. H. M. Baikie has been appointed to succeed him as Deputy Chief Engineer, as from the same date.

Khan Bahadur M. D. Sheik has been appointed to officiate as Deputy Agent, Personnel, N.W.R., as from April 28.

Mr. N. K. Mitra has been appointed to officiate as Divisional Superintendent, E.I.R., as from May 11.

Mr. A. B. Turner, Deputy Chief Mechanical Engineer (C. & W.) Running, E.I.R., has been granted four months' leave preparatory to retirement as from May 13.

Mr. O. Bulleid, Assistant to Chief Mechanical Engineer, L.N.E.R., who, as announced in our issue of June 4, is to succeed Mr. R. E. L. Maunsell as Chief Mechanical Engineer of the Southern Railway, entered the service of the former Great Northern Railway in 1901 as a premium apprentice at Doncaster. In 1906 he was made Assistant to the Locomotive Running Superintendent and, in the following year, Assistant to the Works Manager. He left the Great Northern Railway in 1908, in order to become Assistant Works Manager at the Freinville Works of the French Westinghouse Company. In 1910 he was appointed Mechanical Engineer to the exhibitions branch of the Board of Trade for the Brussels and Turin Exhibitions of 1910 and 1911, returning in 1912 to Doncaster as Personal Assistant to Mr. H. N. Gresley. In 1914 Mr. Bulleid was commissioned in the Army Service Corps, and served at G.H.Q. and Army Headquarters in France, being promoted to the rank of Major in 1917. In August, 1918, he was transferred to Richborough as Works Manager. Demobilised in February, 1919, he returned to Doncaster and, in the following year, was appointed Assistant Carriage and Wagon Superintendent. He was appointed to his present position as Assistant to Chief Mechanical Engineer in April, 1923.

Mr. O. Bulleid

Appointed Chief Mechanical Engineer, Southern Railway, with effect from November 1

We regret to record the death of Mr. E. E. Loomis, Chairman of the Lehigh Valley Railroad, and until recently its President. Mr. Loomis was born in Herkimer County, New York, and was educated at Lafayette College. Beginning his railway career in the Legal Department of the Denver and Rio Grande Western Railroad, he became a Divisional Superintendent on the Erie Railroad in 1894; by 1898 he had been appointed General Superintendent of the New York, Susquehanna and Western, now part of the Erie system, and the following year he was appointed Superintendent of the Mining Department of the Delaware, Lackawanna and Western, before the large anthracite railroads were forced to detach their important coal-mining interests. In 1902 Mr. Loomis became senior Vice-President of the Delaware, Lackawanna and Western and by 1917 was appointed President of the Lehigh Valley Railroad, which competes in the same area with the Lackawanna system. Since 1923 Mr. Loomis had acted as Chairman of the Committee on Public Relations of the Eastern Railroads, and in May of this year, on his election as Chairman of the Lehigh Valley, he retired from the presidency of that line.

Mr. Duncan J. Kerr succeeded Mr. Loomis as President of the Lehigh Valley in May last. He was born in Glasgow in 1883, and after obtaining a degree in Science and Engineering at Glasgow University, joined the Pennsylvania Railroad, and later served with what is now the Milwaukee Railroad, the Spokane, Portland and Seattle, and the Great Northern companies, before returning to the East last year to become Assistant to the President of the Lehigh Valley.

We regret to record the death in Buenos Aires, on June 21, at the age of 61, of Mr. W. J. Shilton, General Manager of the Buenos Ayres Midland Railway from 1916 to 1931, and Secretary of the Local Board from 1908 to 1916. From 1889 to 1908, Mr. Shilton was on the B.A. G.S.R., where

he occupied positions in the Management, Traffic Department and on Local Committee staff.

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Mr. J. B. Elliot, as announced above, has been appointed Assistant General Manager of the Southern Railway from October 15, was born in 1898, and educated at Marlborough and the Royal Military Academy, Sandhurst. He was gazetted to the 3rd Hussars in 1917, and was on active service with his regiment in France, Belgium, and on the Rhine until 1920, when he resigned his Commission to take up journalism. After experience in America on the *New York Times*, and in England on the *Daily Express* and *Evening Standard* (of the latter paper he became Assistant Editor), he entered the advertising business, and in January, 1925, joined the Southern Railway as Assistant to Sir Herbert Walker in charge of publicity and advertising. In 1930 he was appointed Development Officer in the newly-formed Traffic Department, and was responsible for reorganising the sales and canvassing arrangements of the company. In 1933 he was appointed Assistant Traffic Manager, which position he now vacates. Mr. Elliot, who is a member of the Superintendents' Conference, Railway Clearing House, has represented the Southern Railway on a number of joint railway committees, among them being *Chemins de Fer Britanniques*, Paris (Chairman); Associated British and Irish Railways, Inc., U.S.A., and Canada; and Railway Air Services, Standing Joint Committee (Chairman 1934 and 1937). He is also the Southern Railway nominee on the Railway Research Service. He visited America and Canada in 1935, in company with other Southern Railway officers, to study rail, road, and air conditions in those countries.

Blackstone Studios] [*New York*

Mr. J. B. Elliot

Appointed Assistant General Manager, Southern Railway, with effect from October 15

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Mr. R. M. T. Richards, who, as announced elsewhere, has been appointed Assistant Traffic Manager, Southern Railway, entered the service of the S.E. & C.R. in 1908. He was first employed in the office of the Superintendent of the Line, and after training, became runner in 1912. In 1914 he was appointed Assistant to the Eastern District Superintendent at Ashford. In April, 1915, he joined the Railway Operating Division in France, taking charge of various detachments until demobilised in 1919. On rejoining the S.E. & C.R. he was appointed Assistant to the London District Traffic Superintendent. In 1930 Mr. Richards was promoted to be Divisional Superintendent of the London West Division, Southern Railway, and in July, 1933, he became Development Officer, the position he is now vacating to take over the duties of Assistant Traffic Manager.

Mr. R. M. T. Richards,

Appointed Assistant Traffic Manager, Southern Railway, as from October 15

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Mr. E. F. E. Livesey, O.B.E., who, as announced elsewhere, has been appointed Development Officer, Southern Railway, entered the service of the S.E. & C.R. in 1906. In 1910 he was attached for some months to the company's Brussels office to gain Continental experience, and was subsequently transferred to the office of the Superintendent of the Line. On relinquishing military service in 1919, he became Assistant to the Paris Agent of the S.E. & C.R., and, on the grouping of railways, returned to England as General Assistant to the Chief Operating Superintendent of the Southern Railway. In 1928 Mr. Livesey was sent to America as representative of the Southern Railway in the U.S.A. and Canada, and on his return in 1931 was attached to the office of the Continental Assistant until July, 1933, when he was appointed Assistant for Development, Traffic Department. In January, 1934, he became Assistant to the Traffic Manager for Special Continental Work, and in October of that year was promoted to be Deputy Continental Assistant to the Traffic Manager, the position from which he is now being transferred to the office of Development Officer.

———

M. Raoul Dautry, who retired from the General Managership of the French State Railways on June 12, has been the subject of many testimonials of the esteem in which he was held by all grades on the State system. At a farewell dinner in Paris on June 9 M. Dautry's late colleagues expressed their appreciation of his remarkable qualities as chief, co-worker and friend, while on the side of the personnel the

Mr. E. F. E. Livesey.

Appointed Development Officer, Southern Railway, as from October 15

degree of esteem in which the retiring General Manager is held among the staff was eloquently described by the speakers at a meeting of the Comité d' Apprentissage du Reseau. One of the greatest tasks that faces the administrator or high executive of a business or enterprise, especially in these difficult times, is to maintain a high degree of efficiency and discipline, while at the same time retaining the respect and esteem of the staff and rank and file. This is true of all administrations whether they be owned and worked by companies or by the State. In this greatest of all the responsibilities that face the general manager of a railway M. Dautry excelled and the testimonies which he has received upon his regretted retirement are eloquent of the quite exceptional degree of affection for him existing among the staff and of devotion on the part of the personnel generally of the State system. A biography of M. Dautry appeared in our issue of May 28.

Mr. H. F. Bauer, Chief Maintenance Engineer, Buenos Ayres & Pacific Railway, sailed for England on leave on June 24.

The London & North Eastern Railway announces that Mr. C. R. Donington, Chief Clerk of the District Mineral Agent's Office, has been appointed London District Mineral Agent.

The late Mr. Ernest Alfred Glanville, formerly Deputy Chief Engineer, South Indian Railway, whose death on March 9 was recorded in our issue of March 12, left estate valued at £13,003 (£10,918 net).

Mr. Donald M. MacRee, O.B.E., General Manager, and Mr. K. N. Eckhard, Superintendent of Electrification, Central Argentine Railway, sailed for England on leave on July 2.

The late Mr. G. W. Winterbottom left estate valued at £9,874 (£8,250 net). Mr. Winterbottom, whose death on May 21 was recorded in our issue of May 28, was Steamship Manager (East Coast), L.M.S.R. in 1923-4.

Mr. O. F. Walford, formerly Secretary of the Dominion Atlantic Railway (leased to the C.P.R.), whose death on April 11 was recorded in THE RAILWAY GAZETTE of April 23, left estate valued at £1,888 (£1,790 net).

Mr. Peter W. Fassler, President of the Fassler Welding Machine Co. Inc., Detroit, Michigan, and a prominent electric welding expert in the U.S.A., is at present on an extended visit to Great Britain. During his stay he will act as electric welding consultant with E. H. Jones (Machine Tools) Limited, Edgware Road, The Hyde, Hendon, N.W.9.

Rail Speed Publicity in America

Some remarkable excursions are now being organised by the leading American railways for the benefit of railway enthusiasts and others; backed by the Railway and Locomotive Historical Society, Railroad Enthusiasts Incorporated, and the *Railroad Stories Magazine*, the railways have taken up the idea with considerable vigour, and have been rewarded by public patronage on a very extensive scale. The New York Central, for example, recently ran a trip from various cities in the Eastern States to the works of the American Locomotive Company at Schenectady, a suburb of Albany, which was patronised by 3,200 people, including a proportion of ladies that was estimated at fully ten per cent. of the total.

The travellers came from New York, 160 miles away, and also from Boston, Buffalo, and many other cities. Up-to-date stock, including dining cars, observation cars, and so on, was provided, and the two New York specials were worked on a schedule equal to that of the Twentieth Century Limited, whose times were improved on. With a train of 975 tons, indeed, a 4-6-4 locomotive ran the first outgoing special from Harmon to Rensselaer, 108·9 miles, in 106¼ min. start-to-stop, and returned with a fifteen-coach special weighing 1,050 tons over the same distance in 104¾ min., averaging 77½ m.p.h. over one 5½-mile stretch of level track with this enormous load. Locomotives due for delivery were held for several days in the Schenectady works in order that the visitors might have the maximum amount to see on their arrival. In addition to the speed and the general railway interest, there was, of course, the attraction of the Hudson River valley, alongside which the New York Central main line runs for almost the entire distance between New York and Albany, and the whole at a round trip fare of 12s. for the 320 miles of travel.

Following this the Pennsylvania, one of the few American railroads to build its own locomotives, organised a similar excursion to its works at Altoona, which, with 12,000 employees, it claims to be the largest locomotive shops in the world. But in this case the distance was far greater, for Altoona is 326 miles from New York, although passengers were also to be picked up *en route* at Philadelphia and Harrisburg. Two trains from New York were required, and two other specials brought passengers from Philadelphia and, in the opposite direction, from Chicago, a total of 1,800 enthusiasts being taken to the works. Again the chief attraction was that the specials were scheduled at the same speed as the famous Broadway Limited, and operated by the latest types of motive power, electric from New York to Paoli, Philadelphia, and steam from there to Altoona, at an average speed for the entire distance, stops included, and gradually steepening grades as the foothills of the Alleghenies are entered between Harrisburg and Altoona, of 56 m.p.h. The latest dining, café, and observation cars were used in the formation of the trains, and an unusual addition to each was one of the open observation cars used by the railway staff in track inspection, with transverse seats rising in tiers from front to back, and so giving an unobstructed view of the disappearing track, for the special benefit for those using cameras and ciné equipment. Special arrangements were made so that this facility should be available to all who desired to make use of it, for at least a part of the journey. Operating, traffic, and motive power department representatives from the Pennsylvania staff accompanied each train in order to answer questions and give information, and again special pains were taken to ensure that there should be plenty of locomotive interest at the works, including a locomotive in steam on the test plant, to occupy the visitors' 2½ hr. at Altoona. The inventive genius of the restaurant car department was displayed in giving names with a railway flavour to all the items on the *ménus*.

On another sightseeing trip, made during recent months from Chicago, the excursion train, double-headed from Fort Wayne with a couple of the famous Pennsylvania Pacifics of the "K4s" class, was operated from Fort Wayne to Gary at a higher speed than the Detroit Arrow, which with its 75 m.p.h. schedule is the fastest steam-hauled train in the world. As British railways have been doing in the past ten or fifteen years, American railways are thus leaving no stone unturned in seeking to interest the public in their locomotives, speed, and operating, and the policy is apparently being very successful.

Editorial comment on the subject of rail speed consciousness appears on page 185 this week.

SOUTHERN RAILWAY POSTERS.—The improved facilities for motorcar transport by the Southern Railway train ferry, described in our issue of July 2, form the subject of an interesting new poster issued by the company. A line of cars is seen proceeding up the ramp that now enables them to be driven direct on to the top deck without the use of cranes or slings, and attention is drawn in the letterpress to the additional convenience that the petrol tanks do not have to be emptied. This summer, too, the Southern Railway has re-issued in colour the now famous poster showing a young traveller in conversation with the driver of the train in which he is about to leave for his holidays. This popular scene is used to draw attention to the day, week-end, and monthly cheap tickets available for Coronation year holidays.

STAFF AND LABOUR MATTERS

Railway Staff National Tribunal

When the Railway Staff National Tribunal sat on Thursday morning, July 22, under the Chairmanship of Sir Arthur Salter, K.C.B., M.P., Mr. Stott continued the presentation of his case on behalf of the Railway Clerks' Association. He stated that the hours of duty of the salaried grades ranged from 35½ to 48 a week, and the reduction of hours over 36 to 36 a week is sought because the Railway Clerks' Association considers that in so far as the reduction might result in more staff and fewer unemployed that would be in the national interest; further, that it was " manifestly inequitable that on duties that are equal in importance and carry the same pay some persons have to work longer than others, and that under modern industrial conditions there should be more leisure."

Mr. Stott then explained the claim for extra payment for time worked between 6.0 p.m. and 6.0 a.m. He said that some grades on the railways received extra payment for work between 10.0 p.m. and 4.0 a.m., but the only compensation which the clerical staff received for night duty was one night off in every ten when they were always on a turn that commenced before 4.0 a.m. or a turn that finished after 10.0 p.m. There was an understanding that clerks in Class 5 were to be transferred to day turns after they had been three years on *continuous* night duty, but there was no such provision for clerks above Class 5. Many clerks in and above Class 5, and some women clerks, were employed continuously or intermittently on turns that began early in the day or finished late at night, but did not carry the night off in ten. The Railway Clerks' Association recognised that it was necessary for many members of the supervisory and clerical grades to be on duty between 6.0 p.m. and 6.0 a.m., but the association submitted that as duty between those hours had many disadvantages as compared with duty between 6.0 a.m. and 6.0 p.m., it should carry extra payment.

With regard to the fifth claim of the association, namely, time off in lieu of work on Bank and public holidays, Mr. Stott said that most members of the salaried and supervisory grades were not required to work on Bank and public holidays, but those who were required usually had to work harder than on ordinary days. Some of those who worked were allowed time off in lieu, either because they had that concession before August, 1919, or because they could have time off without its costing the companies anything for relief or overtime. There were, however, some who could only have time off if the companies provided relief and therefore incurred extra expense. It was contended that it was inequitable that those who worked when their colleagues were on holiday should not receive any compensation.

Mr. Stott concluded his speech shortly before noon on Thursday, July 22.

The Railway Companies' Case

Mr. Kenelm Kerr then presented the case of the four main-line railway companies in opposition to all the claims. His speech continued during the remainder of Thursday, throughout Friday, and was concluded on the morning of Saturday last, occupying in all about nine hours. Mr. Kerr said that the claims covered about 330,000 conciliation grade staff and 81,000 salaried staff, in addition to about 6,000 employees on joint lines and 2,000 Railway Clearing House staff. The claims of the unions fell into two groups: (1) Claims for restoration of deductions from earnings and variations of conditions; and (2) Claims for new and expensive improvements in pay and conditions.

The following are points from the first part of Mr. Kerr's speech.

Claims for Restorations

The deductions and variations were awarded by the National Wages Board in the light of the serious fall in the net revenue of the industry from the level of 1929 to that of 1930 with the prospect of a further decline, though not so serious a decline as in fact occurred. Of these deductions and variations the deduction of two-and-a-half per cent. on earnings in excess of 40s. was discontinued by agreement reached in 1934; the deduction of two-and-a-half per cent. on total earnings was reduced to one-and-a-quarter per cent. in 1936, and in the same year the standard rate for overtime was restored.

Only about half the value of the original relief awarded to the companies is still in force, yet even now the net revenue has not regained the level of 1930, on which the whole of the relief was awarded. The discontinuance of the remainder of the relief is not justified until the industry regains a position better than that on which the relief was originally awarded.

Claims for Improved Pay and Conditions

The other claims submitted by the unions are for new and expensive improvements in pay and conditions in excess of the level of the national agreements. These agreements were made in 1919 and 1920, not by the companies, but by the government which then had possession of the railways for war purposes. The agreements were made in a spirit of excessive optimism at a time when cost of living, and therefore wage rates, were at a far higher level than today, and at a time when the financial position of the companies was better than it is today. The cost of living was then 125 per cent. above pre-war; today it is only 55 per cent. above pre-war.

The level of wage rates of the conciliation grades, after allowing for the deductions and variations, still stands at 119 per cent. above pre-war, though cost of living is only 55 per cent. above pre-war. The railwaymen thus already enjoy a betterment in real wages of 41 per cent. on wage rates. On earnings the betterment is even greater, being as high as 50 per cent. The increase in wage rates in industry generally is about 75 per cent. above pre-war. As against this general 75 per cent. the railwaymen enjoy an increase in wage rates of 119 per cent.

The 50/- Minimum Wage Claim

Replying to Mr. Marchbank's argument that the union had never regarded the base rate of certain grades of 40s. a week as satisfactory, Mr. Kerr demonstrated that in December, 1925, the National Wages Board by Decision No. 41 decided that the level of 40s. was satisfactory. The board did not only not raise that level, but made it clear that it did not regard the level of 40s. for a base rate as necessarily being an " irreducible minimum." Mr. Kerr said that the argument of the union was exaggerated when it based its statistics upon the number of men at base rates below 50s. per week. Mr. Kerr urged that a fairer test was the numbers at the various rates of earnings as shown in the returns published by the Ministry of Transport. He gave these facts and figures:—

- The number of conciliation grades adult male staff earning below 50s. per week is 68,000, or 20·7 per cent.;
- The number earning below 48s. per week is 55,300, or 16·8 per cent.;
- The number earning below 46s. is 42,900, or 13 per cent.;
- The number earning below 44s. is 23,300, or 7 per cent.; and
- The number earning below 42s. is 9,400 only, or 2·8 per cent.

These were the actual earnings, which included the basic rate of pay, plus Sunday pay, overtime and night rates, and contrasted with the figure of 120,000 railwaymen whose rates of pay were below 50s. a week mentioned by Mr. Marchbank.

Mr. Kerr referred to the fact that a large number of these men lived in rural areas, for whom comparable employment was in agriculture, where the average wage rate was only 32s. 10d. a week, and average earnings 35s. with longer hours than those worked by railwaymen. He did not suggest that the agricultural level of wages was generous or satisfactory even, but that that was the alternative employment for men in an agricultural district. Many railwaymen enjoyed various privileges, such as uniforms, railway passes and privilege tickets and low-rented company houses, and these represented a real addition to average wages.

Mr. Kerr said that Mr. Marchbank in submitting the claim had ignored the basic economic consideration, which

was "the ability to pay." Mr. Kerr criticised the household budgets which had been put in by the union and suggested that the official cost of living figures of the Ministry of Labour gave a better test. Analysing the budgets of the union's members, he showed that after adjustment for size of families the amount spent on food compared favourably with that laid down in the minimum of Mr. Seebohm Rowntree.

Nutrition standards adopted by Mr. Rowntree, he said, provided for 3,400 calories for an adult man. Nevertheless, previous generations with much less did not fade away. If the Rowntree 53s. standard was well founded, large sections of the population must be deteriorating, which was not borne out by the facts. Mr. Kerr read extracts from official sources showing that authorities today declared the malnutrition was due, not to insufficient food, but to wrong diet and improper cooking.

He claimed, further, that to establish a minimum of 50s. would wipe out differences between numerous grades and cause anomalies and confusion, while there would undoubtedly follow claims for advances for those at present above 50s. If such claims were put in to get as good an advance all round, the cost would be enormous. The proposal was unsound and unworkable, and the cost would be quite excessive and quite unwarranted.

Reply to A.S.L.E.F. Claims

On Friday, July 23, Mr. Kerr attacked the claims of the A.S.L.E.F. Dealing first with the demand for the abolition of the nine hours roster, he showed how on many occasions the National Wages Board had decided against it, and how, as recently as December last the tribunal rejected a similar claim. He showed too that to concede the claim would inevitably increase lodging turns. "The claim of the society to abolish lodging turns, together with the nine hours roster is really absurd," he declared with emphasis.

As to the society's application for a minimum of a day's pay for each time of signing on duty on Sunday, Mr. Kerr pointed out the cost of parallel claims for other conciliation grades would be £100,000 a year, and the claim was, in effect, one to reverse National Wages Board Decision No. 12. It was the guaranteed week which stood in the way. The guaranteed week was sufficiently onerous when it was imposed on the companies eighteen years ago. Changing conditions rendered it still more onerous upon the companies, and still less appropriate to the requirements of an industry which must function on Sundays as well as weekdays. The guaranteed week ought, he contended, to be amended so that Sunday work could be treated in some way as part of the week. The Sunday work could be shared over the whole of the augmented staff as part of the week's work, and this would dispose of the cry against excessive hours, and give an effective answer to the cry of unequal distribution of Sunday work, and of excessive incidence of Sunday work on individuals or groups of men.

Commenting on the claim for increased holidays with pay for enginemen, Mr. Kerr stressed that the grades of driver and fireman had no case for preferential treatment in this respect against all other grades. Mr. Kerr also pointed out that a similar claim was rejected by the tribunal as recently as December last.

With regard to the quotation from an article in THE RAILWAY GAZETTE which Mr. Squance had used in speaking of the reorganisation of motive power departments of the L.M.S.R., Mr. Kerr drew attention to the fact that the article in question stated: "Also one of the primary conditions in adopting the scheme of modernisation was that the physical effort on the part of the staff should be reduced—in other words, to substitute scientific methods for manual labour." Mr. Kerr said these additional words were important. He could not accept Mr. Squance's description of strain on enginemen and the ill effects on health, and said that an investigation of the incidence of sick absence among footplate staff showed that it is slightly less than the illness experienced by railwaymen generally. As to allegations of "speeding up" the Ministry of Transport figures showed that "the combined figure for the hours that we pay for all the time an engineman spends on any form of work, or waiting, works out in mileage at only four-and-a-third miles to the hour."

Reply to the R.C.A. Claims

Mr. Kerr prefaced his replies to the individual claims of the Railway Clerks' Association by commenting on the favourable position occupied by salaried staff in relation to other grades in the railway service. These advantages included membership of superannuation funds, exception from health and pensions and unemployment insurance, the grant of sick pay and so forth.

Answering the claim for a special night duty allowance (*i.e.*, time worked between 6 p.m. and 6 a.m.) Mr. Kerr submitted that the present arrangements adequately meet the circumstances. As to the claim respecting work on Bank and public holidays, Mr. Kerr said this was, in effect, one for increased annual leave with pay to the extent of four days per annum, and was not justified.

Mr. Kerr gave a lengthy and carefully reasoned reply to the claim for pay increases for those members of the salaried staff for whom no promotion is available. It is inherent, he said, in the classification arrangements, which were adopted by the companies at the request of the unions, that there can be no advance beyond the maximum for the post occupied. Mr. Kerr argued that the claim "is nothing but a disguised claim for the improvement of the agreed scales of pay." The practice of the railway companies in the matter is in line with the practice in the Civil Service, and he regarded the claim as unreasonable.

Mr. Kerr expressed surprise at the claim for reduction of hours of salaried staff to 36 a week. There was a stronger case for levelling hours up to 48 those at present below than for levelling down to the exceptional level of 36. It could not be claimed, he said, that a 48 hour week did not give reasonable leisure.

Labour's Big Share

Mr. Kerr, turning from detailed examination of the items to general argument, stated that before the war the net product of the industry (*i.e.* the balance after meeting the cost of materials and other charges), was shared in almost equal proportions by labour and capital. Capital necessarily bulked very large in railways by reason of the enormous expenditure on land, permanent way, rolling stock, station buildings, and so forth. Today the net product of the industry was shared in the proportion of three quarters to labour and only about a quarter to capital—a proportion which was inadequate if the railways were to maintain their position, and to improve and expand their services, for all of which purposes a continuous flow of expenditure and new capital was necessary.

Cost of Claims

Mr. Kerr gave particulars of the annual cost involved in the claims.

N.U.R. (5 claims)	£3,629,000
A.S.L.E.F. (7 claims) ..	£1,014,000
R.C.A. (5 claims)	£5,247,000

Excluding all element of overlap, the total cost of the claims of the three unions before the tribunal was £9,029,000 per annum.

Regard must also be had, Mr. Kerr pointed out, to the potential cost in respect of the staff not directly covered by the claims or by consequential extensions. If the arrangements claimed were extended to all railway employees to whom they would be applicable, the cost would reach the colossal total of £49 millions a year. Mr. Kerr reminded the tribunal that in December last, in its decision upon the sectional claims then submitted by the A.S.L.E.F., the tribunal pointed out that claims such as these would, if granted, cost more than the entire sum available for capital (not only for dividends but for debenture interest as well) and were thus impossible. Moreover, Mr. Kerr showed, some of the present claims were specifically rejected by the tribunal in July last year, and others as recently as December last.

Financial Arguments

Mr. Kerr turned then to the financial aspects of the companies' case in opposition to the claims, and made the following main points. The measure of the proper remuneration of railway capital is the standard revenue as determined by Parliament in the Railways

Act. In 1936 the net revenue was £15½ millions short of the standard revenue. That is to say, net revenue in 1936 was 30 per cent. short of the standard revenue.

In 1936 the net revenue was £9¼ millions below the net revenue actually earned in 1929, and was still £2 millions below the net revenue of 1930, the low level of which was the basis of the relief awarded by the National Wages Board in 1931. Even after the substantial improvement from the period of depression, £78 millions of railway capital received no return in 1936. Obviously, these facts afford no justification for granting at the expense of railway capital, new and costly concessions to railway labour already so fortunately placed. The arguments of the unions, whether based on cost of living, or upon current wages increases in other industries, or upon the alleged " prosperity " of the railway industry, have been conclusively disproved by the facts given.

Evidence was given by the railway companies in the recent proceedings before the Railway Rates Tribunal, showing that in a full future year the increased cost of labour, due mainly to increased numbers of staff, would amount to over £2 millions; and the increased cost at present prices of coal and other materials would be over £5 millions; a combined increase of over £7 millions. Although this figure was not directly comparable with the estimated increase of nearly £7 millions for traffic receipts in 1937, it was clear that the net revenue of 1937 would not be at such a level as to justify costly concessions to labour.

On Saturday morning last Mr. Kerr concluded the companies' case by commenting on the adequacy of remuneration of railway labour, which he subjected to various tests. First, the loss to labour by percentage deductions, &c., as compared with the loss to capital by diminution in net revenue. Secondly, a comparison of the total wage bill with the pre-war level; and then a comparison of the increase in labour cost with the increase in traffic charges; the increase in rates of pay and earnings compared with the pre-war level; the increase in remuneration of railway labour over pre-war level compared with that of industry generally; real wages as compared with 1920; and real wages as compared with pre-war.

Mr. Kerr demonstrated the striking contrast in the remuneration of capital and labour as judged by the respective shares of the net product of the industry, and he said that although the onus of proof was on the claimants they had not proved their case. He ended a comprehensive review by demanding " justice for the stockholder " at the hands of the tribunal.

The spokesmen for the three unions then replied to numerous points which had arisen in the course of Mr. Kerr's speech, and the tribunal adjourned on Saturday afternoon until Wednesday, July 28. The proceedings on that day will be reported in our issue of next week.

Railway Rates Tribunal Decision

When the Railway Staff National Tribunal met on Wednesday last, July 28, the Chairman, Sir Arthur Salter, asked Mr. Kenelm Kerr, the companies' spokesman, whether he had any remarks to make concerning the announcement in the press that morning of the Railway Rates Tribunal in regard to an increase in railway charges. In reply Mr. Kerr said, " We have seen the press announcement of the Railway Rates Tribunal in regard to an increase in railway charges, but we have no further information in regard to its effect on revenue. Until the full judgment is available and has been considered in detail, we are not in a position to say what reduction should be made in the companies' estimate of £5,289,000 as the yield of the increase on charges proposed by them to the Railway Rates Tribunal."

Engineering Wages Settlement

Certain railway shopmen—other than those covered by Industrial Court Decision No. 728—are affected by the announcement made on Tuesday last, July 27, that the engineering trade unions had accepted the terms recently negotiated by a sub-committee with representatives of the Engineering and Allied Employers' National Federation. The new arrangements provide for 3s. a week advance in two stages, annual holidays with pay, and an increase in overtime rates. There is to be an addition to the national bonuses for all adult male workers of 1s. 6d. a week to operate from the opening of the pay period in the week beginning August 23, and 1s. 6d. from the opening of the pay period in the week beginning November 15.

With regard to annual holidays, it has been agreed that for each full week's work performed, an *ex gratia* allowance shall be credited, representing one-fiftieth of the appropriate day time rate, plus time workers' national bonuses for the time being. Where less than 47 hours is worked in any week, the credit shall be the appropriate portion of the full week's allowance. These credits are to be accumulated in a special fund by each firm.

The settlement provides that there shall be no local wage applications for three months after the second advance of 1s. 6d. Allowance for the first two hours of day-shift overtime is to be increased from time-and-a-quarter to time-and-a-third. The two sides are to set up a joint committee to explore possibilities of consolidation of the national bonuses.

The George Bennie Railplane

The George Bennie railplane system of transport, which was briefly described and illustrated in THE RAILWAY GAZETTE of July 11, 1930, was the subject of a film shown last week by Mr. Bennie to members of the engineering press and others. The film demonstrated the building and equipping of the Bennie railplane car in the shops, the construction of the steelwork for the rigid overhead structure from which the cars are suspended, and the erection of this (in 1929) on the site chosen with the co-operation of the L.N.E.R. for an experimental length of track at Milngavie, near Glasgow. Then was shown the operation of the finished length of line, with Mr. James Calder, formerly General Manager, Scotland, and other officials of the L.N.E.R. making an inspection prior to embarking on a trial run. Among those who have already seen the film may be mentioned Sir Charles Bressey and Sir Edwin Lutyens, who are engaged in the Highway Development Survey of Greater London. Apart from its possible uses in the main arteries of traffic in this country, Mr. Bennie put forward his invention as a solution to the vexed problem of providing speedy transport between the centres of large towns and their airports. Mr. Bennie has estimated the cost of erection, maintenance, and operating a section of his railplane system between London and Heston airport, and claims that on a capital expenditure of £1,000,000 a net revenue of £411,000 or 41 per cent. per annum of the capital cost would be earned. He explained, however, that his construction figure was based on the payment of wayleaves for his line and not the purchase of land. His system is capable of safely despatching one car a minute and carrying 50 passengers per car. Mr. Bennie is at present preparing models and plans for the erection of a railplane and road bridge linking Blackpool and Southport, and the Blackpool Corporation, we understand, has given its general approval to the erection of this bridge as it considers the line would be a great asset to the town. Mr. Bennie is also in communication with the Air Attaché to the French Embassy in London with reference to a proposal to link Le Bourget airport and Paris by means of his railplanes. In addition he is preparing plans for the erection of a line between Birmingham City and its airport. Mr. Bennie is making preliminary arrangements for the erection at an early date of a four-mile length of railway in the vicinity of London when he hopes that London residents will be able to enjoy travelling at a speed of 120 m.p.h. in safety and comfort.

WESTERN ISLES AIRWAYS.—Western Isles Airways Limited was incorporated in Edinburgh during July as a private company with a nominal capital of £100. The subscribers include Mr. George Nicholson, Managing Director of Northern and Scottish Airways Limited.

Home Railway Returns for 1936

Returns of the capital, traffic, receipts, working expenses, and operating results of the railway companies of Great Britain for the year 1936 have been issued by the Ministry of Transport, following on the preliminary statement published in March. The aggregate figures do not now include those of the London Transport railways.

The amount appropriated for the payment of interest and dividends in 1936 was £36,439,402, compared with £34,348,660 in 1935, £33,113,722 in 1934, £30,832,409 in 1933, £28,840,481 in 1932, and £35,090,153 in 1931. These figures represent 3·26 per cent., 3·08 per cent., 2·97 per cent., 2·76 per cent., 2·59 per cent., and 3·16 per cent., respectively, upon the total capital receipts. On ordinary stock issued the average return per cent. was 1·44 in 1936, against 0·96 in 1935, 0·86 in 1934, 0·76 in 1933, 0·57 in 1932, 0·95 in 1931, and 2·20 in 1930.

The length of road open for traffic at December 31, 1936, was 20,121 miles, a decrease of 31 miles. Expressed as single track, the total mileage of running lines was 36,843 (a decrease of 23 miles), and of sidings 15,693 miles (an increase of 13 miles). Of traffic locomotives there were 19,974 steam, against 20,328, electric 13 (the same), and petrol, oil, and oil electric 42, against 18. Amongst rail-motor vehicles are included 1,637 electric (against 1,610), and 131 "other" (against 126). Passenger-carrying vehicles together numbered 43,562, a decrease of 358. The number of merchandise and mineral vehicles increased from 633,953 to 635,946, and the total tonnage capacity of these vehicles, excluding brake vans (13,471), was 7,364,813, an increase of 105,053 tons. The average capacity per vehicle rose from 11·70 tons to 11·83 tons. Twelve-ton wagons have increased in number from 154,118 in 1925 to 294,824 in 1935 and 312,842 in 1936. Of wagons (other than special vehicles), of 20 tons capacity and over there were 31,277 at the close of 1936, of which 27,731 were allocated specially to mineral traffic. Corresponding figures at the end of 1935 were 29,634 and 27,138 respectively. Private owners' vehicles registered in 1936 included 8,573 twelve-ton and 487 twenty-ton coal wagons, compared with 5,255 twelve-ton and 42 twenty-ton wagons in 1935. Railway-owned containers have increased from 6,290 in 1931 to 10,514 in 1934, 11,269 in 1935, and 13,034 in 1936.

Total receipts from passengers in 1936 were £55,773,370, an increase of £2,019,927, or 3·76 per cent. in comparison with 1935. First class ordinary receipts amounted to £3,621,377, an increase of £330,225, or 10·03 per cent., and third class ordinary receipts to £40,222,308, an increase of £1,424,091, or 3·67 per cent. Passenger journeys at standard fares were only 13·77 per cent. of the total ordinary passenger journeys in 1936, as against 64·97 per cent. in 1924, and the corresponding receipts were 15·14 per cent. in 1936 and 65·59 per cent. in 1924. Third-class season ticket receipts rose by 1·59 per cent. from £5,964,633 to £6,059,549, but first class season ticket receipts dropped by 2·36 per cent. from £1,554,897 to £1,518,217. The Southern, which has the largest season-ticket revenue of any of the four main line companies, was the only one to record an increase (£9,501) in first class season ticket receipts in 1936. Gross receipts from parcels and miscellaneous passenger train traffic (excluding mails and parcels-post) in 1936 were £12,805,088, a net increase of £70,135.

The total volume of higher class merchandise rose from 45,313,801 tons in 1935 to 48,323,881 tons in 1936. Of minerals and merchandise (Classes 1-6) 54,873,667 tons were conveyed in 1936, against 50,746,782 tons in 1935, and the weight of coal, coke, and patent fuel rose from 174,817,089 tons to 177,514,546 tons. Excluding free-hauled traffic, the average haul for higher-class merchandise and livestock was 106·46 miles in 1936 compared with 104·52 miles in 1935; but the average receipt per ton-mile was 1·960d. against 2·022d. For minerals and merchandise (Classes 1-6) the average haul rose from 63·83 miles to 63·91 miles, but the average receipts per ton-mile fell from 0·993d. to 0·974d. The average haul for coal rose from 42·21 miles to 43·32 miles, but the average receipt per ton-mile fell from 1·039d. to 1·029d.

Expenditure on railway working increased by £3,160,533, but the operating ratio fell from 80·79 per cent. to 79·62 per cent. In traffic expenses there was an increase of £1,094,916, chiefly in salaries and wages. Locomotive running advanced by £1,228,958.

BRITISH RAILWAY CAPITAL, 1936

	£
Capital authorised	1,262,449,048
Capital created	1,182,228,647
Capital issued	1,127,066,141
Deduct balance of nominal additions and deductions ...	44,579,345
Capital issued (excluding nominal additions and deductions)	1,082,486,796
Add balance of premiums and discounts	33,924,593
Deduct calls in arrear and amount uncalled	22,424
Sinking fund debenture stock redeemed	170,000
Total capital receipts	1,116,558,965
Capital expenditure :—	
On railway	1,016,987,795
On road vehicles	4,103,747
On steamboats, &c.	9,135,667
On docks, harbours and wharves	72,516,362
On hotels	9,449,512
On electric power stations, &c.	2,769,766
Subscriptions to companies other than railway ...	11,936,266
Total capital expenditure ...	1,184,042,538
Capital expenditure in excess of capital receipts	67,483,573
Total capital powers and other assets available for further expenditure	26,119,613

TABLE OF REVENUE RECEIPTS AND EXPENDITURE

	Year 1936			Year 1935		
	Gross receipts	Expenditure	Net receipts	Gross receipts	Expenditure	Net receipts
	£	£	£	£	£	£
Railway	163,983,487	130,570,351	33,413,136	157,709,932	127,409,818	30,300,114
Road transport ...	707,837	585,885	121,952	646,579	543,973	102,606
Steamboats ...	3,727,144	3,295,135	432,009	3,573,129	3,232,587	340,542
Canals	170,707	219,438	Dr. 48,731	170,591	220,044	Dr. 49,453
Docks, harbours, and wharves ...	6,864,435	6,185,393	679,042	6,667,087	6,168,808	498,279
Hotels, refreshment rooms, and cars...	5,823,475	5,183,449	640,026	5,529,258	4,941,029	588,229
Collection and delivery of parcels and goods ...	5,167,347	6,075,539	Dr. 908,192	4,920,041	5,728,052	Dr. 808,011
Other separate businesses ...	25,335	67,655	Dr. 42,320	16,733	60,430	Dr. 43,697
Total	186,469,767	152,182,845	34,286,922	179,233,250	148,304,741	30,928,609
Miscellaneous receipts (net) :—						
Rents (houses, lands, hotels, lump sum tolls, &c.)			3,425,540			3,577,480
Interest and dividends from investments in other undertakings			875,602			787,196
Transfer fees			26,284			21,353
General interest			532,326			911,157
Special items			550,957			567,171
Total net receipts			39,697,631			36,792,966
Deduct miscellaneous charges (interest on superannuation funds, chief rents, rent charges, rents of leased undertakings, &c.)			3,170,132			3,097,908
Net revenue for the year			36,527,499			33,695,058
Balance brought forward from last year's account			255,273			145,516
Special items			Dr. 138,004			702,850
Appropriation from general reserve			50,557			59,500
Amount available for appropriation			36,695,325			34,602,924

MINISTRY OF TRANSPORT ACCIDENT REPORT

Crewe, L.M.S.R.: April 14, 1937

At about 2.55 p.m. the up Irish Mail, consisting of 14 bogie vehicles drawn by 4-6-0 engine No. 6126, was approaching No. 3 platform at Crewe station at moderate speed when the leading axle of the trailing bogie of kitchen car No. 30034 broke close to the left-hand wheel seat. Both wheels were carried some distance in the 4-foot and then diverted by a crossing. The left-hand wheels ran up a platform ramp, and the kitchen car and the one following were tilted over at about 45 degrees, struck the station wall, and were dragged along for about 110 yd. until the driver, who noticed a jerk and heard shouting, pulled up. Casualties were fortunately limited to 1 passenger seriously injured, 28 suffering minor injuries and shock, and 8 dining car staff; 4 of the injured men were detained in hospital. The derailed vehicles were considerably damaged; gas escaped rapidly from the kitchen car, without fire. There was some damage to other vehicles, signal equipment, station and platform walls and gas mains. The weather was fine. Col. A. C. Trench conducted the inquiry.

The train was on time, and Driver Evans said running was quite normal; he knew nothing of the accident until about the middle of the platform when he felt a pluck from the back and heard platform staff shouting. Having full vacuum he stopped in about an engine length. His fireman and the North Junction signalmen confirmed this; one of the latter saw a sudden cloud of dust or smoke from under one of the middle coaches. Guard Clays confirmed that speed was normal. Col. Trench is satisfied that axle breakage initiated the derailment, and was not caused by it.

Kitchen car No. 30034 was built at Derby in 1925. It was last in the shops in August, 1936, when the axle in question was fitted; since then it had run 35,400 miles and been in regular service on the Irish Mail since January 3, 1937. A certain number of the coaches of this train are examined daily over a pit, and this kitchen car was thus examined on the morning of the accident. Examiner Hughes, using an acetylene lamp, found no defects, but the flaw was practically flush with the inner surface of the wheel boss, and Mr. Spink, of the Carriage and Wagon Department, thought it would have been almost impossible to have detected this flaw. Col. Trench is inclined to agree and considers it unjustifiable to attribute any blame to Hughes.

Particulars of Axle

The broken axle was manufactured in 1927 by Steel, Peech & Tozer, to L.M.S.R. standard specification C.W.I. of 1925, prescribing that axles shall conform to B.S. specification No. 24 of 1921. The present L.M.S.R. specification No. 7B is substantially identical with the latest revision of this. The axle was made of acid open-hearth steel, unturned between wheel seats; there were 138 axles in the cast and no failures are recorded. Wheels were pressed on at the Birmingham Carriage & Wagon Company's works with 66 and 69 tons pressure respectively, the standard being 70 tons ± 5. The axle was originally in service under a brake van, but the mileage worked thus is not ascertainable. No derailment is recorded. The flaw had extended to 65 per cent. of the whole cross-section; about 50 per cent. of it was smooth and free from appreciable rust, but the final portion was slightly different, as though existing a few days only. Flawed surfaces extended round the whole perimeter; part of the final fracture broke through clean metal. A metallurgical examination indicated the steel to be of good quality, conforming to the company's current specification.

Instructions have, however, been issued that all axles from the cast are to be temporarily withdrawn from service for careful examination, the wheels being pressed off. Unless other defects are found Col. Trench sees no justification for scrapping the axles. Failures of coaching stock axles in train accidents have averaged a trifle under 4 a year for the last 3 years. The Chief Mechanical Engineer, Mr. W. A. Stanier, considers that such flaws usually start with corrosion and spread by stress reversal fatigue. The company is trying to discover a suitable protective composition; it would have to be elastic and readily removable. The stock of certain fast trains now has a pit examination at intervals of not more than a month, and axles are examined in the shops when a coach is lifted at intervals not exceeding 12 months for regular long distance stock, when they are scraped and a magnetic detector used to some extent. This would not be effective for a flaw immediately adjacent to the wheel face. The maximum permitted life for axles generally has recently been reduced from 35 to 30 years, but instructions have now been issued that no axle over 10 years old may be placed under regular long distance stock, and after 15 years the wheels must be pressed off for a full examination.

Inspecting Officer's Conclusions

Col. Trench has no recommendation to make. A fatigue flaw, probably begun by corrosion or possibly a tool mark on the wheel seat, led up to the fracture, perhaps induced finally by shock when traversing an abrupt diamond crossing. This caused the derailment. The flaw was almost impossible to detect unless the wheels were pressed off. The steel was of good quality, complying with the latest specification, but the company is taking steps to reduce still further the liability to similar failures, already rare.

London Transport Sports

For the first time since its inception, it was found necessary, owing to building operations at Chiswick, to hold the ninth annual sports gala on the L.T.A.S.S.A. sports ground at Osterley, which, if somewhat less commodious, proved to be an excellent venue. It was estimated that 7,000 people were present (equalling the attendance record at Chiswick), and in fine weather conditions the full sports programme was carried out without a hitch. There were many notable performances, including the setting up of new time records, and Mr. B. E. Sales, of the Metropolitan Railway Section, worthily consolidated his position by winning the 100 yards (in 10 2/5 seconds), the 220 yards, and the Long Jump Championships; in the 100 yards it was his fourth successive win. The London Transport Challenge Cup for the best aggregate score in the athletic events was retained by the holders (Chiswick General), who registered 48 points and beat their nearest rivals, Metropolitan Railway, by 10 points.

Organisation of the sports gala was in the hands of a large and efficient committee, whose chairman, Mr. E. Major, deserves praise for the excellence of the arrangements, not least of which was the distribution of loud-speakers disseminating results of events to all parts of the ground; Mr. G. G. Fisher (Publicity Department) also merits thanks for the facilities afforded to members of the press. Owing to Lady Ashfield's unavoidable absence, Mrs. John Cliff presented the prizes. Sir Edward Holland, speaking after the prize-giving, said that any misgivings they may have felt regarding the transference of the sports gala to Osterley had been fully dispelled by the unqualified success of the first venture, due, in very large part, to the untiring efforts of the organisers; he also congratulated the various athletes on their fine achievements. Mr. L. V. Hicks, Vice-Chairman, replied briefly on behalf of the committee. The London Passenger Transport Board was represented by the following directors and chief officers :—

Sir Edward John Holland, D.L., J.P.; Brig.-Gen. Sir Henry P. Maybury, G.B.E., K.C.M.G., C.B., J.P., and Mr. John Cliff; Messrs. A. H. Hawkins, Ernest Evans, W. S. Graff-Baker, V. A. M. Robertson, R. McDonald, W. S. Every, E. Rawdon Smith, A. W. C. Richardson, H. S. Gordon, E. T. Brook, J. B. Mackinnon, J. L. B. Lindsay, and J. H. Rutland.

QUESTIONS IN PARLIAMENT

Charing Cross Railway Bridge

Mr. Vyvyan Adams (Leeds, W.—U.) on July 13 asked the Minister of Transport what were the present intentions of the Government towards demolishing the existing railway bridge at Charing Cross, and replacing it by a road bridge and/or a new railway bridge; and what was proposed to be done with the site of the Southern Railway terminus at Charing Cross.

Captain Austin Hudson (Parliamentary Secretary to the Ministry of Transport): As my hon. friend is aware, the questions involved in the project to which he refers are extremely difficult and far reaching. It has not yet proved possible to reach a decision on them.

North Staffordshire Railway Services

Mr. Ellis Smith (Stoke-on-Trent, Stoke—Lab.) on July 14 asked the Minister of Transport if action could be taken to increase and improve the railway services in the North Staffordshire area.

Dr. Leslie Burgin (Minister of Transport): I am informed by the L.M.S.R. that it reviews continually the train services in North Staffordshire in order to meet to the greatest possible extent the needs of the travelling public, and that improvements and adjustments are made from time to time in the various services operating in the area. The company is prepared to review specially any particular service which the hon. member may regard as inadequate if he will so indicate.

Leven Railway Crossings

Mr. Henderson Stewart (Fife, E.—Lib. Nat.) on July 14 asked the Minister of Transport whether he had yet taken any action upon the petition from Leven Town Council regarding the dangerous state of two railway crossings.

Dr. Leslie Burgin: I have had the crossings inspected and have been in correspondence with the railway company. After careful consideration of all the circumstances, I have now written to the Leven Town Council and I have sent my hon. friend a copy of the letter.

Underground Fares During Rush Hours

Captain Balfour (Isle of Thanet—U.) on July 14 asked the Minister of Transport if, in view of the inadequate accommodation on the Underground system during rush hours, he would ask the London Passenger Transport Board to instruct ticket inspectors not to claim excess first class fares from third class ticket holders who had been forced to enter first class carriages or lose their trains.

Dr. Leslie Burgin: I am informed by the London Passenger Transport Board that its ticket inspectors do not claim excess first class fares from third class ticket holders in the crowded east-end sections of the line between Bow Road and Mansion House during the morning and evening rush hours. The board does not consider that the loadings of trains on the western sections of the line are such as to justify third class passengers travelling in first class compartments, but if the trains are especially crowded during the rush hours excess fares are not demanded from third class passengers standing in first class compartments.

Wood and Steel Rolling Stock

Mr. W. W. Wakefield (Swindon—U.) asked the Minister of Transport if his technical advisers were satisfied on grounds of safety with the latest railway practice of using a combination of wood and steel in the construction of main-line rolling stock.

Dr. Leslie Burgin: My technical advisers are of opinion that there is no justification on grounds of safety for pressing the main-line companies to depart from their present practice. I would add that in any case I have no power to compel a change of practice.

Lower Zambesi Bridge

Mr. H. Day (Southwark Central—Lab.) on July 14 asked the Secretary of State for the Colonies whether he could state the total amount that had been expended to date in the negotiations and building of the Lower Zambesi bridge.

Mr. W. Ormsby-Gore (Secretary of State for the Colonies): The expenditure on the bridge and the Southern Approach Railway amounts to £1,811,178, including interest during the construction period but excluding certain items still to be brought to account, which are estimated at some £100,000.

Relieving Traffic Congestion

Mr. D. Frankel (Mile End—Lab.) on July 21 asked the Minister of Transport whether he was aware that a large number of leading business and transport employers in London were willing to join in a conference to consider staggering of business hours with a view to relieving traffic congestion; and whether, in view of his publicly expressed willingness to consider such a conference, he could inform the House what progress in this direction had been made.

Dr. Leslie Burgin: I have had some discussion on this subject with the London Passenger Transport Board but I have not yet been approached by any other business or transport employers. I shall be glad to discuss the subject with any group of employers interested. There is much preliminary work to be carried out before any general conference would be useful.

Replying to further questions, the Minister of Transport said the whole matter was under active consideration. He agreed to set on foot during the Recess preliminary steps for a Conference.

Future Traffic Requirements

Sir George Mitcheson (St. Pancras, S.W.—U.) on July 21 asked the Minister of Transport if he could now state when he hoped to receive the Report of Sir Charles Brassey on the future traffic requirements of the Metropolis.

Dr. Leslie Burgin: I expect to receive this Report by the end of the year.

Replacement of Worn Railway Tracks

Mr. A. M. Lyons (Leicester, E.—U.) on July 21 asked the Minister of Transport what action was being taken in the replacement of worn railway tracks.

Dr. Leslie Burgin: As my hon. and learned friend will appreciate, the responsibility for maintenance of their lines rests solely with the railway companies.

Privately-Owned Railway Wagons

Mr. H. Day (Southwark, Central—Lab.) on July 21 asked the Minister of Transport whether he would give particulars and date of the latest census that had been taken of privately-owned railway wagons running on the various railways of Great Britain; and what plan the Government was considering whereby the railway companies could acquire these trucks and eliminate congestion caused by the present system.

Dr. Leslie Burgin: The last census of privately-owned wagons registered to run on the lines of the railway companies in Great Britain was taken at January 31, 1928, and the results were published in Appendix XV of the First Report of the Standing Committee on Mineral Transport. A new census is being taken next week. The Government has not under consideration any plan for facilitating the acquisition of privately-owned wagons by the railway companies.

Investments in Brazilian Railways

Sir Nicholas Grattan-Doyle (Newcastle-upon-Tyne, N.—C.) on July 26 asked the Secretary of State for Foreign Affairs, whether he would, on behalf of the scattered body of British investors who were suffering hardship owing to their savings having been invested in Brazilian railways, take their case up with the Brazilian Government, in view of the fact that, owing to the policy of the Brazilian authorities, much of the British capital sunk in the Leopoldina Railway Company, the Leopoldina Terminal Company, and the Great Western Railway of Brazil had been rendered almost worthless.

Mr. A. Eden (Secretary of State for Foreign Affairs): I understand that direct negotiations are in progress between the Brazilian Government and the companies in question. I am moreover in close touch with the companies in the matter.

NOTES AND NEWS

The Brussels Nord-Midi Railway.—The Belgian National Railways Company has been authorised to float on the domestic market or abroad a loan of Belg. fr. 150,000,000 (£1,013,500). The proceeds will be used for the construction of the new line connecting the northern and southern railway stations in Brussels.

Railwaymen's Hostel at Inverness.—The L.M.S.R. has decided to erect at Inverness a hostel for its employees. The hostel will be built in Longman Road at a cost of £10,000. Its purpose is to provide accommodation for the company's workmen who are frequently compelled to stay in Inverness, and who often have difficulty in finding accommodation, particularly in the summer months. The hostel will provide accommodation for over 50 men, and will include a caretaker's house. The building will be on modern lines, and will have facilities for recreation.

Increase in Railway Charges.—The Railway Rates Tribunal announced on Tuesday night that it had decided that the amalgamated railway companies' charges should be increased on October 1 by five per cent. The increase will affect standard and exceptional charges, but it is subject to certain provisions, the broad effect of which is that in the case of merchandise and coal, charges of less than 10d. a ton, and in the case of workmen's tickets, fares of less than fivepence, will not be increased The suburban passenger fares of the companies within the London Passenger Transport area are not affected. An editorial note on this decision appears on page 181.

Inverurie Works, L.N.E.R.—One of the largest changeovers from steam to electrical power in the North of Scotland will take place in the immediate future when the L.N.E.R. closes down the steam plant at its Inverurie (Aberdeenshire) locomotive works and substitutes a supply of electricity from the Grampian Electricity Supply Company. The changeover involves the energy required for upwards of 70 motors, with a total output of over 700 h.p. and about 1,700 lighting points. The electric current supply to be used in future will be generated at Tummel and will be converted at Inverurie works from a.c. to d.c. Inverurie works formerly dealt with locomotive building and maintenance on the Great North of Scotland Railway, and since the amalgamation has been used to maintain the rolling stock working over that section of the L.N.E.R.

Opening of the Redhill—Port Augusta Section of the Trans-Australian Railway.—This new section of line was officially opened on July 23, when two ribbon-cutting ceremonies were performed, one by Mr. Lyons, Prime Minister, at Port Pirie, and the other at Redhill by Sir Herbert Hudd, South Australian Minister of Railways. As well as shortening the journey by the Trans-Continental expresses between South Australia and Western Australia by from five to nine hours, the completion of this new line eliminates a break of gauge.

Windscreens for London Trams.—The London Passenger Transport Board has decided to equip 400 trams with windscreens for the protection of the tram drivers. These newly equipped cars will be put into service at the rate of four a week; at the end of two years the whole of the remaining tram fleet will be so equipped. Trams are being replaced by trolleybuses at the rate of three to four hundred a year.

Iraq Railway Construction.—One of the important purposes for which a loan of £1,000,000 in 4½ per cent sterling bonds at £94 per cent. was successfully floated on Wednesday by the Iraq Government is the construction of a railway extending the existing Iraqi railway system from Baiji through Mosul to Tel Kotchek. The latter is the present railhead of the standard-gauge line from the Bosphorus through Asiatic Turkey and Syria; and Baiji is the northernmost point of the old Baghdad Railway in Iraq. The proposed new line will therefore complete the standard-gauge railway through to Baghdad on the alignment formed in pre-war years by the German engineers.

Improvements at Peterborough Stations, L.N.E.R.—New ticket offices and parcels accommodation is to be provided at Peterborough North and Peterborough East stations, L.N.E.R. At Peterborough North a passimeter booking office is to be installed on the up platform; the parcels and cloakroom accommodation are to be combined, and the bookstall is to be removed from its present position, where it is an obstruction, to a site adjacent to the proposed passimeter office; on the down platform, the bookstall is to be set back in the station building, leaving the platform clear. At Peterborough East, a passimeter booking office is also to be installed, and the parcels office will be re-arranged, whilst the bookstall will be removed to the position now utilised for storing cycles, and a new cycle store will be provided.

Notable Signalling Developments at York, L.N.E.R.—In connection with the enlargement of the L.N.E.R. station at York, one of the largest contracts ever given to a railway signalling contractor has been let to the Westinghouse Brake & Signal Co. Ltd. for the installation of up-to-date colour-light signals. These will be provided from Copmanthorpe and Naburn, about 4 miles south of York on the Leeds and London lines respectively, to Poppleton junction, 1½ miles north, to join up with the existing colour-light signalling which extends onwards through Northallerton to Darlington. The new installation, which will be of the relay interlocking type, will be the largest of its kind in the world. It will be controlled on the route-lever system from one signal box of novel design, situated in the centre of the station, from which about 300 points will be operated; these will be worked by compressed air electrically controlled, except in the case of the more remote ones at the large double junctions at Chaloners Whin, where all-electric motors will be used. Some 32 miles of actual running lines will be completely track circuited in 340 separate sections, all of which will be indicated in the new signal box on a control panel of unique design, together with the complete indication of all points and signals; also all requirements regarding shunting movements and the starting of trains in and around the station will be indicated to the signalmen.

The Monte Bignone Cableway.—The new cableway, or *funivia*, from San Remo to Monte Bignone in the Ligurian Alps, which rises from sea level to 4,300 ft. in a distance of nearly five miles, is not only the longest in the world, but it has the largest aerial span. From the last intermediate supporting pylon to the terminal station on Monte Bignone the distance is 1,784 metres—over one mile. Starting from San Remo, the cableway passes over the Golf Course and the first stopping place, near to the Club House, is reached in less than 10 min.; the second stop is at the picturesque village of San Romolo (2,450 ft.); and the complete journey takes about 40 min. The wire rope, consisting of 145 steel strands, has been tested to 3½ times the maximum strain which it will be called upon to bear. The six carriages each have accommodation for 25 persons, and there is a continuous telephonic contact with the terminal stations.

Rail Fatality Rate in U.S.A. Cut 25 per cent. since 1923.—Since 1923 the U.S.A. railways have reduced their accident fatality rate by approximately 25 per cent., according to the annual bulletin, *Accident Facts*, issued by the National Safety Council (U.S.A.). There were 1,933 fewer railway accident fatalities in 1936 than in 1923. These figures are an indication of the increasing care on the part of the railways within their own organisations. While passenger and employee fatalities have decreased 74 and 65 per cent., respectively, level crossing deaths have decreased only 22 per cent., and trespasser fatalities have actually increased 2 per cent. during the same period. This indicates that the railways have been successful in all branches of safety effort under their complete control. In presenting accident figures extending over a period of 23 years, the report shows the excellent results which have attended the campaigns for safety constantly waged by the railways. The most important reductions, according to the bulletin, are in railway passenger and employee fatalities.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 29th Week			Totals to Date		
	1937	1936	Inc. or Dec.	1937	1936	Inc. or Dec.
L.M.S.R. (6,871 mls.)	£	£	£	£	£	£
Passenger-train traffic...	734,000	716,000	+ 18,000	14,223,000	13,662,000	+ 561,000
Merchandise, &c. ...	472,000	458,000	+ 14,000	14,198,000	13,781,000	+ 417,000
Coal and coke ...	190,000	201,000	− 11,000	7,495,000	7,015,000	+ 480,000
Goods-train traffic ...	662,000	659,000	+ 3,000	21,693,000	20,796,000	+ 897,000
Total receipts	1,396,000	1,375,000	+ 21,000	35,916,000	34,458,000	+1,458,000
L.N.E.R. (6,315 mls.)						
Passenger-train traffic...	476,000	454,000	+ 22,000	9,295,000	8,872,000	+ 423,000
Merchandise, &c. ...	312,000	315,000	− 3,000	9,791,000	9,373,000	+ 418,000
Coal and coke ...	190,000	194,000	− 4,000	7,180,000	6,734,000	+ 446,000
Goods-train traffic ...	502,000	509,000	− 7,000	16,971,000	16,107,000	+ 864,000
Total receipts	978,000	963,000	+ 15,000	26,266,000	24,979,000	+1,287,000
G.W.R. (3,738½ mls.)						
Passenger-train traffic...	306,000	305,000	+ 1,000	5,908,000	5,722,000	+ 186,000
Merchandise, &c. ...	206,000	198,000	+ 8,000	5,726,000	5,516,000	+ 210,000
Coal and coke ...	109,000	98,000	+ 11,000	3,249,000	2,909,000	+ 340,000
Goods-train traffic ...	315,000	296,000	+ 19,000	8,975,000	8,425,000	+ 550,000
Total receipts	621,000	601,000	+ 20,000	14,883,000	14,147,000	+ 736,000
S.R. (2,157 mls.)						
Passenger-train traffic...	434,000	413,000	+ 21,000	8,990,000	8,512,000	+ 478,000
Merchandise, &c. ...	66,000	67,500	− 1,500	1,765,000	1,819,500	− 54,500
Coal and coke ...	25,000	29,500	− 4,500	880,000	897,500	− 17,500
Goods-train traffic ...	91,000	97,000	− 6,000	2,645,000	2,717,000	− 72,000
Total receipts	525,000	510,000	+ 15,000	11,635,000	11,229,000	+ 406,000
Liverpool Overhead ... (6½ mls.)	1,391	1,294	+ 97	36,959	33,788	+ 3,171
Mersey (4½ mls.) ...	4,005	3,837	+ 168	121,035	116,727	+ 4,308
*London Passenger Transport Board ...	557,800	548,000	+ 9,800	2,268,300	2,240,700	+ 27,600
IRELAND						
†Belfast & C.D. pass. (80 mls.)	4,429	4,410	+ 19	70,815	73,097	− 2,282
,, ,, goods	482	616	− 134	14,443	16,289	− 1,846
,, ,, total	4,911	5,026	− 115	85,258	89,386	− 4,128
Great Northern pass. (543 mls.)	16,000	14,950	+ 1,050	290,300	288,000	+ 2,300
,, ,, goods	9,650	9,200	+ 450	272,850	287,200	− 14,350
,, ,, total	25,650	24,150	+ 1,500	563,150	575,200	− 12,050
Great Southern pass. (2,076 mls.)	50,274	47,658	+ 2,616	953,735	961,461	− 7,726
,, ,, goods	40,124	41,116	− 992	1,186,888	1,200,798	− 13,910
,, ,, total	90,398	88,774	+ 1,624	2,140,623	2,162,259	− 21,636

* 4th week (before pooling) † 30th week

Extensive Rolling Stock Orders for U.S.A. Railways

The Association of American Railroads announces that on June 1 of this year Class I railroads in the U.S.A. had more new freight cars on order than on any corresponding date since 1924. The number on order on June 1, this year, was 45,176. On June 1, 1924, there were 61,256; on June 1 of last year, 25,748 cars were on order; and on the same date two years ago there were 1,479. New freight cars on order on June 1 of this year, included the following: 20,420 coal cars; 20,291 box cars, including both plain and automobile; 1,764 refrigerator cars; 1,391 flat cars; 800 stock cars, and 510 miscellaneous cars.

On June 1 of this year, Class I railroads had 329 new steam locomotives on order, the largest number for any corresponding period since 1930, at which time there were 431 on order. On the same date last year 58 new steam locomotives were on order, while two years ago there were ten. New electric and diesel locomotives on order June 1 totalled 30. New freight cars installed in service in the first five months of 1937 totalled 27,807, the greatest number of installations in any corresponding period since 1930, when there were 42,122. Class I railroads in the first five months last year installed 8,948 new freight cars, and in the corresponding period in 1935 1,294 were installed.

In the first five months of the present year new steam locomotives installed totalled 122 compared with nine in the corresponding period last year, and 20 in the corresponding period two years ago. New electric and diesel locomotives installed in the same period this year totalled twelve compared with eight in 1936, and 55 in 1935. New freight cars and locomotives leased or otherwise acquired are not included in the above figures.

British and Irish Railway Stocks and Shares

Stocks	Highest 1936	Lowest 1936	Prices July 28, 1937	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	64¼	45½	66¼	+2¾
5% Con. Prefce. ...	126½	116¾	117½	—
5% Red.Pref.(1950)	113	108⅛	111⅛	—
4% Deb.	119½	110½	106	+½
4½% Deb.... ...	121	114	111	—
4½% Deb.... ...	129	121	117½	—
5% Deb.	141	134	128½	—
2½% Deb.... ...	79⅛	74	69½	—
5% Rt. Charge ...	136½	130	127½	—
5% Cons. Guar. ...	135¼	127¾	126	—
L.M.S.R.				
Ord.	35⅝	17	35	+1½
4% Prefce. (1923)	83	52½	79	+½
4% Prefce. ...	92¾	81	86	—
5% Red.Pref.(1955)	109¼	103¼	105	—
4% Deb.	111¾	105 9/16	102	—
5% Red.Deb.(1952)	119⅝	115½	112⅛	—
4% Guar. ...	106¾	101⅝	101	+1
L.N.E.R.				
5% Pref. Ord. ...	14	9	11¼	+1¼
Def. Ord.	7¼	4¾	5½	+½
4% First Prefce.	79¼	55¼	74½	+1½
4% Second Prefce.	31⅞	18¼	30½	+3½
5% Red.Pref.(1955)	100½	77¾	98	+2
4% First Guar. ...	104½	98¾	99	+½
4% Second Guar.	99	90	91½	—
3% Deb.	85¾	79	76	—
4% Deb.	109¾	104½	101	—
5% Red.Deb.(1947)	116¼	110½	110½	+1
4½% Sinking Fund Red. Deb.	111½	107½	107	—
SOUTHERN				
Pref. Ord.... ...	98¾	82½	94	+1
Def. Ord.	27⅝	20⅛	23½	+1½
5% Pref.	120¾	118½	116½	—
5% Red.Pref.(1964)	119¾	115¼	115½	—
5% Guar. Prefce.	136	129½	127	—
5% Red.Guar.Pref. (1957)	120	115¾	115½	—
4% Deb.	117 13/16	109½	104	+½
5% Deb.	140	134	126½	—
4% Red. Deb. 1962–67	116½	110	106½	—
BELFAST & C.D.				
Ord.	9	4½	4	—
FORTH BRIDGE				
4% Deb.	107	105	101½	—
4% Guar. ...	107 5/16	104	100½	—
G. NORTHERN (IRELAND)				
Ord.	19½	9¾	7	—
G. SOUTHERN (IRELAND)				
Ord.	63	41	33	−1
Prefce.	65	46	41	+½
Guar.	97¼	81	71	−1¼
Deb.	99¾	83¼	85¼	−1¼
L.P.T.B.				
4½% "A" ...	127¾	121	115½	—
5% "A"	138¼	133½	125½	—
4½% "T.F.A." ...	111½	108⅛	105	—
5% "B"	131¾	123¾	117½	—
"C"	112½	93	82	+1
MERSEY				
Ord.	40¾	23	25½	−1
4% Perp. Deb. ...	103	98	97*	—
3% Perp. Deb. ...	78	74⅝	74½*	—
3% Perp. Prefce.	68⅞	63¼	65½	—

* ex dividend

CONTRACTS AND TENDERS

Nasmyth Wilson & Co. Ltd. has received an order from the Crown Agents for the Colonies for two 0-6-0 tank locomotives for the Palestine Railways.

G. H. Sheffield & Co. (Engineers') Ltd. has received an order for Sheffield-Twinberrow bogies required for the four bogie third-brake and three bogie mail-brake coaches which the Metropolitan-Cammell Carriage & Wagon Co. Ltd. have under construction for the Gold Coast Government Railway to the order of the Crown Agents for the Colonies.

Tarran Industries Limited, of Hull, has secured the contract, to the value of £21,867, to erect a new sheet piled wharf for the L.M.S.R. dock system at Barrow-in-Furness.

Locomotives and Rolling Stock for India

The Standing Finance Committee on Indian Railways, as an outcome of the marked improvement in railway earnings in recent months, has sanctioned an expenditure of over £3,000,000 on new rolling stock, which will be distributed as follows :—

Wagons	£1,200,000
Carriages	£1,000,000
Locomotives and boilers... ...	£650,000
Railcars	£200,000

The locomotives are to include 24 broad-gauge and 33 metre-gauge units. Orders for some of these have already been placed.

Worcester Windshields & Casements Limited, has received a contract from the Great Western Railway for the supply of the company's patent sliding extractor sliding ventilator lights for new rolling stock requirements. Incidentally, Worcester Windshields & Casements Limited, supplied similar units for the Coronation Scot trains of the L.M.S.R.

The Chief Controller of Stores, Indian Stores Department, Simla, has recently placed the following orders for tyres and axles :—

Vickers (India) Limited : 80 locomotive bogie tyres, 82 locomotive coupled wheel tyres and 114 other tyres.
Krupp Indian Trading Co. Ltd. : 25 crank axles.
Shaw, Wallace & Co. Ltd. : 22 crank axles.
Heatly & Gresham Limited : 25 crank axles.
Samuel Osborn (India) Limited : 134 straight axles and 815 steel tyres.
Jessop & Co. Ltd. : 304 straight axles.
Balmer, Lawrie & Co. Ltd. : 21 crank axles.

Ferguson Brothers Limited, Port-Glasgow, has received an order from the L.M.S.R. for a dredger. The machinery for the dredger will also be manufactured by this firm. A similar order has also been received from the Wellington Harbour Board, New Zealand.

Guest, Keen, Williams Limited has received orders from the Chief Controller of Stores, Indian Stores Department, Simla, for a total of 84 sets of switches.

Rail Anchors Limited has received orders from the Indian Stores Department for a total of 21,500 rail anchors.

Jessop & Co. Ltd. has received orders from the Chief Controller of Stores, Indian Stores Department, Simla, for approximately 1,070 cwt. of mild steel plate.

The Gregg Car Company (Belgian branch) has received an order from the South African Railways and Harbours Board for a number of bogie tank wagons.

The Westinghouse Brake & Signal Co. Ltd., has received from the L.N.E.R. one of the largest contracts ever given to a railway signalling contractor for the insulation of colour-light signals. These will extend from Copmanthorpe and Naburn about four miles south of York, on the Leeds and London lines respectively, to Poppleton junction to join up with the existing colour-light signalling onwards through North Allerton to Darlington. Further details are given in a news paragraph on page 216.

The Bombay, Baroda & Central India Railway Administration has placed the following orders to the inspection of Messrs. Rendel, Palmer & Tritton :—

Consolidated Brake & Engineering Co., 360 vacuum brake cylinders.
Saxby & Farmer (India) Ltd., Vacuum brake fittings.

The English Steel Corporation has received an order from the Madras & Southern Mahratta Railway, to the inspection of Messrs. Rendel, Palmer & Tritton, for four locomotive crank axles.

Whitelegg & Rogers Limited has recently received orders for Ajax grease lubricating equipment for application to 100 existing locomotives of the South African Railways ; and for application to six 2-10-2 type locomotives under construction by Fried. Krupp A.G. for the Chung Hsing Coal Mining Company.

Heatly & Gresham Limited has received orders from the Chief Controller of Stores, Indian Stores Department, Simla, for 10 copper patchplates 18 ft. by 6 ft. by $\frac{3}{16}$ in.

The Crown Agents for the Colonies have recently placed the following orders :—

Standard Telephones & Cables Limited : Automatic switching equipment.
Babcock & Wilcox Limited : Boiler parts.
Associated British Machine Tool Makers Limited : Boring mill.
Pease & Partners Limited : Brake blocks.
T. Bolton & Sons Limited : Cadmium copper wire.
Phosphor Bronze Co. Ltd. : Carriage and wagon axlebox brasses.
T. Firth & J. Brown Limited : Locomotive, carriage, and wagon tyres.
Metropolitan Cammell Carriage & Wagon Co. Ltd. : Carriage underframe details.
General Electric Co. Ltd. : Carrier and testing equipment.
Harland Engineering Co. Ltd. : Centrifugal pumps.
J. Oakes & Co. (Riddings Collieries) Ltd. : Channel pipes and bends.
Stewarts and Lloyds Limited : Cast-iron pipes.
F. Morton & Co. Ltd. : 15 30-ft. clear span deck bridges.
P. & W. Maclellan Limited : 24 20-ft. clear span deck bridges, and steel plates and angles.
J. Wilkes, Sons & Mapplebeck Limited : Copper wire.

The Associated Equipment Co. Ltd has recently received the following orders :—

Great Northern Railway (Ireland) : Two Regent passenger vehicles.
Devon General Omnibus & Touring Co. Ltd. Two Regent passenger vehicles.
Sydney Transport Board, Australia : 50 A.E.C. oil-engined passenger chassis, comprising 13 Regal single-decked and 37 Regent double-decked vehicles. (This order is the largest so far received by the A.E.C. from any single undertaking in Australia.)

Burn & Co. Ltd. has received an order from the Chief Controller of Stores, Indian Stores Department, Simla, for a total of 109 sets of crossings, 12 switches, and 30 sets of 1 in 12 turnouts with 21-ft. overriding switches.

The Associated British Machine Tool Makers Limited has received an order from the Chief Controller of Stores, Indian Stores Department, Simla, for one spur gear-driven planing machine.

The Madras & Southern Mahratta Railway Administration has placed the following orders to the inspection of Messrs. Rendel, Palmer & Tritton :—

Talbot Stead Tube Co., Ltd., 163 boiler tubes and 80 superheater flue tubes.
Soc. Commerciale d'Ougree, 10,000 bearing plates.
S.A. des Forges de la Providence, 24,000 tiebars for pot sleepers.

The South African Railways and Harbours Board has placed the following orders :—

La-Burgeoise et Nicaise & Delcune, 100 hopper wagons.
Société Anonyme des Ateliers Metallurgique, 100 hopper wagons.
Société Anonyme L'Industrie, Louvain, 50 hopper wagons.
Metropolitan-Cammell Carriage & Wagon Co. Ltd., 250 high-sided wagons, BB.4 type.
Birmingham Railway Carriage & Wagon Co. Ltd., 150 high-sided wagons BB.4 type.
Société Anonyme d'Atelier de la Dyle, 100 high-sided wagons BB.4 type.

Tenders are invited by the Egyptian State Railways Administration, receivable by August 31 at the General Management, Cairo, for the supply of two high-speed slotting machines, four heavy-duty shaping machines, six heavy duty lathes, one horizontal boring machine, one vertical boring and turning mill, one capstan lathe, and two radial drilling machines.

The South African Railways & Harbours Administration is calling for tenders, to be received by August 16, for the supply and delivery of 75,000 lb. wire point G.I. No. 6, and 50,000 lb. wire, signal, plain, G.I. No. 10. Tenders endorsed " Tender No. 1413 for signal material " should be addressed to the Chief Stores Superintendent, Park Station Chambers, Rissik Street, Johannesburg.

The South African Railways & Harbours Administration is calling for tenders (Tender No. 1360), receivable in Johannesburg by September 13, for the supply and delivery of 20 underframes complete with bogies for bogie refrigerator wagons, type L.O. 5, 3 ft. 6 in. gauge. A copy of the specifications and general conditions of tender may be borrowed from the Department of Overseas Trade, London, S.W.1.

OFFICIAL NOTICES

Crown Agents for the Colonies

COLONIAL GOVERNMENT APPOINTMENTS

APPLICATIONS from qualified candidates are invited for the following posts:—

M 4,967. SECTION ENGINEER required by the Government of Nigeria for the Railway Department for two tours of 12 to 24 months each with probability of further employment. Salary £475 a year for two years, then £500-£25-£600-£30-£840 a year. Free passages and quarters and liberal leave on full salary. Candidates, aged 23-35, should be Corporate Members of the Institution of Civil Engineers or possess an Engineering Degree recognised as granting exemption from Sections A and B of the A.M.I.C.E. examination and have had practical experience in railway and bridge maintenance, reinforced concrete design and construction. Candidates who are students of the Institution of Civil Engineers, and have had the requisite practical experience, are also eligible for consideration.

M 5,355. STOCK VERIFIER required by the Government of Sierra Leone for two tours of 12-24 months with possible permanency. Salary £400-415-430-30-600 a year. Free quarters and passages and liberal leave on full salary. Candidates, aged 30-35, must have had good experience of Railway or Public Works Stores or in a large building contractor's stores, and possess a fair knowledge of general building and railway materials and machinery spare parts used in connection therewith. They must be conversant with the practice and customs of the timber trade and be able to measure timber.

Apply at once by letter, stating age, whether married or single and full particulars of qualifications and experience and mentioning this paper to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1., quoting the reference number against the appointment for which application is made.

WANTED FOR INDIA.—Works Inspector for large Wagon Works to take charge of Works Inspection Dept. Applicants should have had experience of inspection of railway rolling stock in a well-known Works in this country, and should be competent to undertake the inspection of component parts and completed steel carriage frames and wagons. They should be familiar with the testing of materials, and should have had good general and technical education. Salary about Rs. 700 per month, five year agreement, free passages, and provident fund, and free unfurnished quarters. Apply, by letter, with copies of testimonials, and stating age, and whether married or single to Box No. 217, c/o THE RAILWAY GAZETTE, 33, Tothill Street, Westminster, S.W.1.

ASSISTANT TO WORKS MANAGER required for large Rolling Stock Works in India engaged on the construction of all steel wagons and carriage underframes. Applicants about 30-35 years of age, should be of good general and technical education, and must have held a similar position in a Wagon Works in this country. They must be familiar with all branches of the wagon building trade, and should possess organising ability and some experience of office routine. Salary about £60 per month, five years agreement, provident fund and free passages. Home leave on re-engagment. Apply, by letter, with copies of testimonials, stating age and whether married or single, to Box No. 287, c/o THE RAILWAY GAZETTE, 33, Tothill Street, London, S.W.1.

WANTED FOR INDIA.—Personal Assistant to General Manager. A vacancy offering exceptional prospects of rapid promotion, occurs with one of the largest Engineering Works of repute in India, engaged on general engineering work and having foundry, railway rolling stock and bridge and structural departments, for a mechanical engineer with experience of Works management. Applicants should be about 38 years of age, of good general and technical education, and should have had similar experience in a well-known engineering works in Europe. Salary according to qualifications (about £115 per month) with five years agreement, free passages, provident fund, and generous Home leave on renewal of contract.—Apply, by letter, with copies of testimonials, and details of experience, stating age, and whether married or single to Box No. 207, c/o THE RAILWAY GAZETTE, 33, Tothill Street, Westminster, S.W.1.

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RAILWAY AND OTHER REPORTS

London & North Eastern Railway.—The directors, after providing for the payment of fixed charges and interest on debenture stocks, have declared interim dividends for the past half-year at the following rates: 2 per cent. for the half-year on the 4 per cent. first and second guaranteed stocks; 1 per cent. for the half-year on the 4 per cent. first preference stock; and 1¼ per cent. for the half-year on the 5 per cent. redeemable preference stock. The warrants for these dividends will be posted on August 14. Consideration of payment of dividends upon other stocks has been deferred until the accounts for the whole year are available. Compared with the corresponding period of 1936 there is an increase in gross receipts of railway and ancillary businesses and miscellaneous receipts (net) of £1,222,400, and an estimated increase in expenditure of £451,900, leaving an increase in net receipts of £770,500. Having in view that no decision has yet been given in respect of the application by the railway companies to the Railway Rates Tribunal for authority to increase rates and fares, and further that an application by the railway unions for large increases of wages and alterations in conditions of service is at present before the Railway Staff National Tribunal, the directors are of opinion that it would not be advisable to declare any higher rates of interim dividends on the 4 per cent. first preference and 5 per cent. redeemable preference stocks. Passenger train traffic receipts show an increase of 4·69 per cent. and merchandise and coal traffic receipts an increase of 4·96 per cent.

For the 26 weeks ended July 3, compared with the corresponding period of 1936, the number of passengers originating on the company's system (excluding season tickets) showed an increase of 5,651,000 or 6·31 per cent.; the total tonnage of merchandise and coal traffic (originating on the company's system or invoiced by the company) showed an increase of 2,943,800 or 5·34 per cent.; passenger engine mileage increased by 1,191,400 or 3·09 per cent.; goods engine mileage increased by 2,032,900 or 4·89 per cent.

London Midland & Scottish Railway.—For the first half of 1937, compared with that of the previous year, the company's results were: Increased receipts, £1,410,000; increased expenditure, due to increased rates of wages and prices of materials, £780,000, due to additional traffic, &c., £320,000, a total of £1,100,000. The net increase is £310,000. Owing to 1936 being a leap year, the results reflect one less day's working. Traffic receipts are maintaining a steady improvement, but against this the substantial rise in prices of materials continues. A full interim dividend for the June half year on the 5 per cent. redeemable preference stock was paid on July 1, and a full interim payment will be made on the 4 per cent. preference stocks, with no interim payment on the ordinary stock; the warrants relating to the 4 per cent. pref. stocks will be posted on August 24.

Anglo-Argentine Tramways Company.—Gross receipts for the year 1936 amounted to £1,903,595, compared with £1,808,157 in 1935, but expenses rose from £1,849,086 to £2,017,286, leaving a debit balance of £113,691, against £40,929. After charging the annuity of £70,660 to the City of Buenos Ayres Tramways Company, and debenture interest, including interest on interest in arrear, the deficit for the year is £753,018.

Brazil Railway Company.—Holders of the 5 per cent. first mortgage 60-year variable income gold bonds (international series) are informed that the variable interest on the English issue for the year 1936 will be paid at the rate of ½ per cent. on August 3.

Kitson & Co. Ltd.

During the past few years the well-known Leeds locomotive-building firm of Kitson & Co. Ltd., founded by James Kitson over a century ago, has experienced considerable difficulty, partly due to bad trade conditions, and partly to the withdrawal of capital as the older members died. The firm placed itself in the hands of the debenture holders and in 1934 Sir Leonard Coates was appointed receiver. Up to that time the control of the business had remained in the hands of members and relatives of the Kitson family. Sir Leonard has carried on the business of receiver and manager for the debenture holders, maintaining the goodwill and connection of the company. Kinloch & Co., a firm of merchant bankers, has now provided further working capital for the company and acquired a controlling interest. The receivership has been brought to an end, and the company is now provided with adequate resources. The directors are Sir Basil Tangye, Mr. A. D. Kinloch, Mr. H. M. Gulland, Mr. Peel Fletcher, and Colonel Kitson Clark.

Railway Share Market

Most sections of the Stock Exchange have shown a much more cheerful trend this week. Prices responded to moderate improvement in demand which resulted from the view that a strong upward movement in values may be shown in a few weeks when sentiment is no longer affected by holiday influences. Home railway stocks were buoyant as a result of the excellent impression created by the half-yearly statements and the decision of the Railway Rates Tribunal in favour of a 5 per cent. rise in railway rates and charges. The market is taking the view that the latter increase is likely to offset any further rise in costs that would result if a concession were made in respect of the claim for higher wages. Favourable estimates, therefore, remain current with regard to the dividend outlook of the junior stocks.

L.M.S. ordinary was good at increased prices, it being calculated that the railway is likely to benefit most from the higher transport charges. The market is estimating for earnings of fully 2½ per cent. on the ordinary stock for the whole year, and dividend hopes range up to 2 per cent. For the previous year 1¼ per cent. was paid. The 4 per cent. preference and 1923 preference also made better prices, the yields offered being regarded as attractive. Much more attention was given to L.N.E.R. second preference. The half-yearly statement showed that the increase in expenses has been rather less than was generally anticipated, and substantial benefits may accrue in the last quarter of the year from the higher railway rates. The first preference was also in larger demand at better prices, the resumption of interim payments on this stock having created an excellent impression. Great Western ordinary participated in the upward movement, there being continued hopes of a dividend of 3½ per cent. for the year. Southern deferred and preferred were also good, it being assumed that the raising of the half-yearly payment on the preferred stock suggests confidence that the company's progress is likely to be accelerated. There was continued demand for London Transport "C" stock, which recovered further to 82.

Leading Argentine railway ordinary and preference stocks improved, sentiment having been under the influence of the belief that the application for increased transport charges will be granted. Elsewhere San Paulo was steadier. American railroad stocks were irregular, but Canadian Pacific improved.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1936-37	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1936	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1936	Prices: Lowest 1936	Prices: July 28, 1937	Yield (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	25.7.37	13,840	+ 2,163	30	481,240	404,080	+ 80,166	Ord. Stk.	25	15¼	19½	Nil
	Argentine North Eastern	753	24.7.37	11,371	+ 2,185	4	35,037	31,858	+ 3,179	"	12	2	10½	Nil
	Argentine Transandine	—	—	—	—	—	—	—	—	A. Deb.	54	45	85	4 13/16
	Bolivar	174	June, 1937	5,700	— 500	26	35,000	41,000	— 6,000	6 p.c. Deb.	9	5	8½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	16	11½	16	3½
	Buenos Ayres & Pacific	2,806	24.7.37	82,630	+ 9,269	4	283,499	265,149	+ 18,350	Ord. Stk.	17½	6	11	Nil
	Buenos Ayres Central	190	10.7.37	$157,800	+ $51,700	2	$219,000	$155,600	+ $63,400	Mt. Deb.	31½	11	30	Nil
	Buenos Ayres Gt. Southern	5,084	24.7.37	125,993	+ 24,705	4	408,251	377,905	+ 30,346	Ord. Stk.	31¾	13¾	27	Nil
	Buenos Ayres Western	1,930	24.7.37	47,643	+ 10,758	4	154,218	136,428	+ 17,790	"	29¾	11	23½	Nil
	Central Argentine	3,700	24.7.37	149,873	+ 23,172	4	526,330	445,834	+ 80,496	"	32932	8¾	27	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	21	4½	12½	Nil
	Cent. Uruguay of M. Video	980	17.7.37	16,299	+ 1,458	3	37,275	38,658	— 1,383	Ord. Stk.	7¾	3	5½	Nil
	Cordoba Central	1,218	24.7.37	40,510	+ 2,750	4	148,450	132,860	+ 15,590	Ord. Inc.	5	1	4½	Nil
	Costa Rica	188	May, 1937	25,954	+ 8,505	48	218,282	159,922	+ 58,360	Stk.	36½	32	34⅛	5 15/16
	Dorada	70	June, 1937	14,000	+ 400	26	90,400	79,300	+ 11,100	1 Mt. Db.	107	101½	104½	5¾
	Entre Rios	810	24.7.37	15,490	+ 3,013	4	48,598	42,188	+ 6,410	Ord. Stk.	17	6	11	Nil
	Great Western of Brazil	1,092	24.7.37	6,000	— 400	30	216,700	230,200	— 13,500	Ord. Sh.	½	5/16	½	Nil
	International of Cl. Amer.	794	May, 1937	$592,447	+ $55,571	22	$2,787,690	$2,617,518	+ $170,172	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	½	-/6	½	Nil
	La Guaira & Caracas	22¾	June, 1937	5,370	+ 910	26	33,705	27,340	+ 6,365	Stk.	9	3	7½	Nil
	Leopoldina	1,918	24.7.37	24,062	+ 1,625	30	661,528	515,991	+ 145,537	Ord. Stk.	10½	3½	5	Nil
	Mexican	483	21.7.37	$278,800	+ $53,800	3	$809,600	$680,000	+ $129,600	"	1¼	¼	½	Nil
	Midland of Uruguay	319	June, 1937	9,268	+ 1,677	52	105,596	86,425	+ 19,171	"	1½	⅛	½	Nil
	Nitrate	384	15.7.37	2,908	— 3,587	28	89,753	76,055	+ 13,698	Ord. Sh.	63/6	41/9	2/6	Nil
	Paraguay Central	274	17.7.37	$4,190,000	+ $1,600,000	3	$9,895,000	$6,807,000	+ $3,088,000	Pr. Li. Stk.	85	71	81½	7⅛
	Peruvian Corporation	1,059	June, 1937	79,279	— 3,845	52	987,424	949,493	+ 37,931	Pref.	15	9	10½	Nil
	Salvador	100	17.7.37	¢12,900	— ¢700	3	¢30,482	¢30,043	+ ¢439	Pr. Li.Db.	18	16	22½	Nil
	San Paulo	153½	18.7.37	30,667	— 2,199	29	935,022	849,529	+ 85,493	Ord. Stk.	86	46½	87½	5 11/16
	Taltal	164	June, 1937	3,115	— 1,105	52	41,035	42,725	— 1,690	Ord. Sh.	11532	14/-	11⅜	8⅞
	United of Havana	1,353	24.7.37	16,681	— 321	4	62,383	58,707	+ 3,676	Ord. Stk.	3¼	1	3	Nil
	Uruguay Northern	73	June, 1937	836	+ 31	52	11,695	9,911	+ 1,751	Deb. Stk.	5	3	9	Nil
Canada	Canadian National	23,773	21.7.37	740,876	+ 62,655	29	21,195,712	19,115,585	+ 2,080,127	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	—4 p.c.	Perp. Dbs.	76	51	68	5⅞
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	104¾	99¾	100½	4
	Canadian Pacific	17,228	21.7.37	537,600	+ 45,400	29	14,958,000	13,947,600	+ 1,010,400	Ord. Stk.	16¾	10516	12	Nil
India†	Assam Bengal	1,329	30.6.37	37,402	+ 2,686	13	322,993	310,259	+ 12,734	Ord. Stk.	87¾	82¼	75½	4
	Barsi Light	202	30.6.37	2,437	— 4,530	13	29,925	34,792	— 4,867	Ord. Sh.	77½	65½	48	10 7/16
	Bengal & North Western	2,111	30.6.37	80,042	+ 8,009	13	813,520	754,128	+ 59,392	Ord. Stk.	319	292⅝	305	5⅞
	Bengal Dooars & Extension	161	10.7.37	4,043	+ 486	14	34,791	33,443	+ 1,348	"	127½	118	97½	5⅝
	Bengal-Nagpur	3,268	10.7.37	189,600	+ 33,143	14	2,016,332	1,811,392	+ 204,940	"	104	100¼	90½	4 7/16
	Bombay, Baroda & Cl. India	3,072	20.7.37	198,450	+ 7,950	16	2,923,800	2,702,025	+ 221,775	"	114	110½	111½	5⅛
	Madras & Southern Mahratta	3,229	30.6.37	162,525	+ 9,334	13	1,515,525	1,501,384	+ 14,141	"	116½	108½	108½	7⅝
	Rohilkund & Kumaon	561	30.6.37	13,561	+ 1,578	13	156,138	158,706	— 2,568	"	311	286	307	5⅞
	South Indian	2,531¾	30.6.37	120,249	+ 12,595	13	1,060,241	1,048,729	+ 11,512	"	107½	102516	100½	½
Various	Beira-Umtali	204	May, 1937	84,161	+ 13,984	35	585,391	513,150	+ 72,241	—	—	—	—	—
	Egyptian Delta	620	10.7.37	7,034	+ 725	14	62,818	57,476	+ 5,342	Prf. Sh.	2¼	1⅝	1⅝	Nil
	Great Southern of Spain	—	—	—	—	—	—	—	—	Inc. Deb.	1½	⅛	3½	Nil
	Kenya & Uganda	1,625	May, 1937	216,935	— 20,539	22	1,334,126	1,229,899	+ 104,227	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	50½	37	45	7¾
	Midland of W. Australia	277	May, 1937	11,590	— 359	48	144,239	149,411	— 5,172	Inc. Deb.	97	93½	95	4 5/16
	Nigerian	1,900	5.6.37	47,818	+ 20,027	10	579,446	302,948	+ 276,498	—	—	—	—	—
	Rhodesia	2,451	May, 1937	411,689	+ 122,936	35	2,932,177	2,295,006	+ 637,171	4 p.c. Db.	107	103½	107½	3¾
	South Africa	13,263	3.7.37	681,871	+ 36,470	14	8,426,395	7,865,898	+ 560,497	—	—	—	—	—
	Victoria	4,728	Nov., 1936	868,988	+ 45,953	21	3,995,540	3,959,297	+ 36,243	—	—	—	—	—
	Zafra & Huelva	112	May., 1937	12,899	+ 4,079	22	70,216	48,574	+ 21,642	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16.

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador and Paraguay Central receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements are based on the current rates of exchange and not on the par value.